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## Parent and teacher attitudes to pharmacological management of medically diagnosed attention deficit primary school children

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**PARENT AND TEACHER ATTITUDES  
TO PHARMACOLOGICAL MANAGEMENT  
OF MEDICALLY DIAGNOSED  
ATTENTION DEFICIT  
PRIMARY SCHOOL CHILDREN**

By

K. J. Angel. Dip. Teach. (E.C.E.)

A Thesis Submitted in Partial Fulfillment of the

Requirements for the Award of

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## USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

## ABSTRACT

The purpose of this study was to compare the attitudes of parents and teachers to the use of pharmacological management or intervention for the child with ADHD in the classroom. Particular focus was placed on differences in attitude toward the use of stimulants, for the management of emotional/behavioural, cognitive/academic, social and classroom organizational behaviours of children with ADHD.

Thirty female Western Australian primary school teachers and 90 female parents participated in the present investigation. Participants included: (a) parents of non-medicated children with ADHD, (b) parents of medicated children with ADHD, (c) teachers in regular primary schools, and (d) parents of non-affected children. These participants were given an attitude questionnaire to determine their attitudes towards the use of stimulant medications with children who have ADHD.

Teachers held significantly less positive attitudes toward the pharmacological management of children with ADHD, than did the parents surveyed. Parents of medicated children with ADHD were significantly more positive in their attitudes towards pharmacological management, than were parents of non-medicated children with ADHD. Parents of medically diagnosed children with ADHD, collectively held significantly more positive attitudes toward pharmacological management for these children, than parents of non-affected children.

Findings are discussed in relation to previous research, which suggests that differences in attitudes may be related to a respondent's current knowledge and experiences with pharmacological management for children who have ADHD. Practical implications for parental support and education of teachers are outlined.

## DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

- (i) incorporate without acknowledgment any material previously submitted for a degree or diploma in any institution of higher education;
- (ii) contain any material previously published or written by another person except where due reference is made in the text; or
- (iii) contain any defamatory material.

Date: 23-11-98

Signature: \_\_\_\_\_

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# CONTENTS

|  | Page      |
|--|-----------|
| Abstract   | i         |
| Declaration  | ii        |
| Acknowledgments                                    | iii       |
| <b>Chapter One: Introduction.</b>                  | <b>1</b>  |
| Background   | 2         |
| Significance                                       | 5         |
| Purpose  | 9         |
| Definitions  | 10        |
| Overview of the Thesis                             | 13        |
| <b>Chapter Two: Literature Review</b>              | <b>15</b> |
| The Incidence of ADHD                              | 17        |
| Treatment and Intervention                         | 17        |
| Pharmacological Treatments and Their Effectiveness | 20        |
| Concerns About Pharmacological Treatments for ADHD | 25        |
| Treatment Acceptability                            | 28        |
| Conclusion   | 42        |
| Hypotheses   | 46        |
| <b>Chapter Three: Method</b>                       | <b>47</b> |
| Participants                                       | 48        |
| Instrument   | 50        |



|   | Page       |
|---|------------|
| Procedure   | 51         |
| Scoring   | 52         |
| Ethical Considerations                                    | 52         |
| <b>Chapter Four: Results</b>                              | <b>54</b>  |
| Statistical Results                                       | 55         |
| The Sub-scale   | 56         |
| Positive and Negative Items                               | 61         |
| Summary   | 61         |
| <b>Chapter Five: Discussion and Implications</b>          | <b>62</b>  |
| General Discussion  | 63         |
| Parents and Teachers                                      | 64         |
| Parents of Medicated and Non-medicated Children with ADHD | 68         |
| Parents of Affected and Non-affected Children             | 72         |
| Positive and Negative Items                               | 74         |
| Limitations and Implications for Future Research          | 75         |
| Implications for Practice                                 | 77         |
| Conclusion  | 79         |
| <b>References</b>   | <b>81</b>  |
| <b>Appendix A.</b>  | <b>93</b>  |
| The Questionnaire   |            |
| <b>Appendix B.</b>  | <b>99</b>  |
| Letter to Participants                                    |            |
| <b>Appendix C.</b>  | <b>101</b> |
| Participant Consent Form                                  |            |

## LIST OF TABLES

|   | Page |
|---|------|
| Table 1. Established treatment interventions for children with ADHD | 18   |
| Table 2. Possible treatment interventions for children with ADHD    | 19   |
| Table 3. Groups of participants in the study                        | 49   |
| Table 4. Comparisons among the groups on each sub-scale             | 57   |
| Table 5. Mean data by group for each sub-scale                      | 60   |

## LIST OF FIGURES

|   | Page |
|---|------|
| Figure 1. Total group mean scores for parent and teacher attitudes to the use of stimulant medication with children who have ADHD | 55   |
| Figure 2. Emotional/Behavioural group mean scores for each group  | 58   |
| Figure 3. Cognitive/Academic group mean scores for each group   | 58   |
| Figure 4. Social group mean scores for each group   | 59   |
| Figure 5. Classroom organization group mean scores for each group   | 59   |

# **CHAPTER ONE**

## **Introduction**

## **Background**

Children with attention deficit hyperactivity disorder (ADHD) exhibit a group of behaviours that make life extraordinarily difficult for themselves and for those around them. Most children have behaviours that are sometimes difficult to understand. For children with ADHD however, these behaviours happen more intensely and more often. The child with ADHD may in appearance be like any other child, however because of his or her inability to organize and concentrate, the child with ADHD often behaves differently and inappropriately. From the child's point of view, however, the behaviours make sense (Barkley, 1995).

The child's apparent lack of language development and inappropriate behaviour, can be of concern to parents and teachers of children with ADHD. Cognitive behaviours may be affected because the child's interest is often constantly distracted by distant environmental sounds, even when the child is spoken to directly. When engrossed in an activity the child may not appear to hear others, frequently "tuning-out" when the parent or teacher is speaking. Expressive language is often delayed and immature for the child's age. When language is acquired, it is often used by the child to demand or to control others, rather than to talk about what the child is doing or to initiate interaction with others (Zubrick, Silburn & Fullerton, 1994).

Organizational behaviours may not seem appropriate for the child's age. Home and classroom routines need to be constantly outlined in order for the child with ADHD to comply. The child with ADHD has a strong need for consistent routines even though he or she may resist them. Older children often have difficulty following school rules, ignoring noise and movement in the classroom or completing assigned tasks and may seem to be constantly in demand of the teacher's attention. Physical actions may be continually repeated and the child may appear to be constantly moving

in one form or another. Gross motor movements may also appear to be awkward. The child may climb frequently and without fear, even though lack of coordination may see the child accompanying bumps and bruises.

Social situations are difficult for these children. Social interaction is frequently initiated by hitting, shoving or pushing others. The child usually does not seem comfortable around other children his or her age. At home the child is unusually demanding of parental attention, often not capable of using his or her own resources to play contentedly by him/herself for even short periods of time. This child frequently has a strong need to control situations, to determine when he/she will eat, sleep and play. Group participation may be difficult for him or her, with the child constantly needing to control the group or unable to cooperate with others (Gordon, 1991).

Emotionally the child with an attention deficit disorder frequently becomes very excited by new experiences, places, many different objects or new people. The child's reaction may be to run around, shout, push objects off the table, hide, cry, swear or laugh inappropriately. Reactions seem impulsive, as if the child has an urgent need to touch, grab, throw or move objects around. The younger child may frequently take out all the toys that are available to him or her, but rarely play with any of them. The older child with ADHD may become occupied with toys for a short time, but often loses interest quickly. This child frequently fails to examine or inspect toys to discover new ways of playing with them (Parker, 1992).

Children with ADHD, do not readily adapt to changes and may demonstrate explosive temper tantrums when confronted with change or limits. The child often goes back again and again to prohibited activity, regardless of the consequences. Attention is not given to limits that have been set. These limits are often not

understood or given priority by the child. Sometimes limit setting is interpreted as punishment or rejection and the child may retaliate with physical violence, verbal abuse or uncontrollable screaming. Despite these difficult behaviours, these children may be very sensitive and cry easily. Often parents find the child needs constant reassurance of their love. Stressful situations might be accompanied by wakefulness, night terrors and poor sleep patterns (Swanson, 1993).

The frequency and intensity of these behaviours in the child with ADHD usually affects and disrupts most areas of the child's daily life. ADHD can impact on the child's relationships with others, play behaviours, talking, learning and understanding. These behaviours lead toward much frustration for the child and for those around them. (Parker and Storm, 1994).

No one particular child will exhibit all of the behaviours associated with ADHD. Many children have a combination of ADHD behaviours. These children comprise approximately 3-5% of the school age population, with boys significantly outnumbering girls (Parker, 1992).

Most experts agree that a multi-modal approach to treatment of the disorder best assists the child medically, psychologically, educationally and behaviourally. This usually requires the coordinated efforts of a team of health care professionals, educators and parents who work together to identify treatment goals, design and implement interventions and evaluate the results of these efforts (Rutter, 1993).

Medical management or pharmacological management of attention deficit disorder is the most common form of treatment for the disorder (Pelham, Carlson, Sams, et al, 1993). Stimulant medications used to treat ADHD are commonly known as psychostimulants such as ritalin and dextroamphetamine.

Stimulant medications have been used to treat ADHD since 1937 (Green & Chee, 1994). Stimulants were not widely used until the late 1950s when methylphenidate was first introduced. In the 1960s there was a dramatic increase in the use of stimulants, however this slowed after controversy arose in the 1970s. The controversy arose from a report in an influential US newspaper. Though the claims were shown to be incorrect, they sparked a congressional inquiry. This controversy continued through to the 1980s and in many countries including Australia, the use of stimulants in the treatment of ADHD was considered by many to be a chemical way of controlling and subduing normal energetic young children. It was also a common belief that the medications were dangerous and addictive. Some researchers believed that drug therapy could result in violence, murder, suicide or permanent brain damage (Green & Chee, 1994).

During the 1990s, largely as a result of parent support group advocacy efforts and demands for professional up-to-date treatment for children with ADHD, a vast amount of research has been conducted. This recent research on the effects of psychostimulant treatment, suggests positive effects on attention, overactivity, visual motor skills and even aggression in 70% or more children with ADHD (Green & Chee, 1994).

The current research investigation contains a survey on the attitudes of parents and teachers toward the use of stimulant medication with primary school children who have been medically diagnosed as having ADHD.

### **Significance**

A considerable amount of literature exists on the effects and use of stimulant medication to manage the symptoms of ADHD (Barkley, DuPaul and Stoner, 1991; Burcham, Carlson and Milich, 1993; Cherkes-Julkowske, Stolzenberg, Hatzes and



Madaus, 1995; Alto and Frankenberger, 1995). Despite this abundant literature, the diagnosis and effects of various forms of management of this disorder remain controversial in the professional fields of medicine and education.

For parents, medical practitioners, psychologists, educators and the students with ADHD, the issues and questions surrounding ADHD are complex and controversial. They include assessment and diagnosis, prevalence, etiology and intervention methods. Medical practitioners increasingly diagnose ADHD in children, yet the precise nature of the disorder and its effective treatment both remain mysterious (Lerner and Lerner, 1991). The most frequent intervention for ADHD is the prescription by physicians of stimulant medication (DuPaul et al, 1991). There has been professional and public concern at the recent rapid increase in the number of children diagnosed as having ADHD, with the prescriptions for stimulant drugs to treat ADHD increasing five fold between 1990 and 1994 (Power, Hess, Bennett, 1995).

Use of psychostimulants to control the behaviour problems of school age children raises a number of issues. These include the administering and monitoring of medication in school; coping with unintended effects; establishing communication patterns between parents, teachers, and physicians; and training teachers and school staff to be competent evaluators of treatment effects (Epstein, Singh, Luebke, and Stout, 1991).

Some researchers have expressed concern with regard to the negative effects of ADHD labeling on young children. The impact of labeling is especially important because of the pivotal role that educators play in dealing with children with special needs (Cornett-Ruiz and Hendricks, 1993). Research suggests that teachers may

convey negative messages about labeled children to peers, parents, teachers, and the child labeled as ADHD (Cohen, 1977).

An additional influence on students is the attitude of their teachers. Often neglected factors in medication compliance and the administration of psychostimulant medication are the knowledge and attitudes of teachers regarding ADHD. A combination of negative teacher attitude and having a parent with ADHD, could be a significant factor leading to noncompliance in children with ADHD (Jerome, 1994). Foley (1979) found the effects of negative or positive teacher comments regarding a child's academic and social behaviours had significant effects on the peer acceptance of the child, regardless of whether the child was labeled as normal or disabled. Controversy exists in relation to the efficacy of the various forms of treatment and management of the symptoms of ADHD.

Since ADHD affects the child in the home as well as the school environment, it is useful to consider the attitudes of parents and teachers toward these intervention methods. Investigating the attitudes of teachers and parents to the effectiveness of medication in reducing emotional, cognitive, social and organizational aspects of behaviour, may give insight into future interventions for the child with ADHD.

Research of teacher and parent attitudes to the pharmacological approach, needs to be given some priority in this area due to the crucial role these adults play in the nurture and development of these exceptional children. Very little research exists in the area of teacher attitudes toward the medicated and the non-medicated child with ADHD and few comparisons have been made between parent and teacher attitudes towards and perceptions of these exceptional children. The results of an attitude survey may lead to better decision-making, with regard to the provisions of support and directions for intervention for the child with ADHD in the classroom. Research

of this nature could reveal the need for improved education, further teacher training or improvement in the availability and quality of support networks for both parents and teachers of the child affected by ADHD.

It is through this research, that one might observe parent and teacher attitudes to the use of stimulant medication and their perceptions for achievement in school. Attitude toward the use of stimulant medication may have significant impact on decisions made about the type of intervention chosen by the parent of a child affected by ADHD. It is also likely that treatment efficacy may be affected by these attitudes. Power, Hess and Bennett (1995) suggest that the success of a school-based approach to intervention depends not only on the potential efficacy of the treatments being used but on a teacher's perceptions of the acceptability of the intervention programme.

Assessing the acceptability of interventions for ADHD is important because some parents and teachers may view certain interventions as unreasonable or unacceptable. In addition, psycho-stimulant medication may be considered by some teachers to be lacking in efficacy. Parental decisions to place their children on medication are probably based on numerous factors (e.g., severity of the child's problem, in particular related to academic performance also availability of accurate information about medication). Despite these factors, teachers currently appear to be an important source of information to parents about medication (Power, Hess, Bennett, 1995).

Little information is available detailing how prepared, Western Australian general education teachers are to work effectively with children with ADHD. This information is important since the classroom teacher may be viewed as the major factor in the success or failure of any student, and particularly those with ADHD (Gordon, 1991; Satterfield, Satterfield and Cantwell, 1980).

When considering the merits of psychopharmacologic intervention for children with ADHD, the notion of "treatment acceptability" emerges as an important consideration (Brown, Dingle, and Landau, 1994). Kazdin (1980) suggests that attitudes held by consumers regarding the appropriateness of a prescribed treatment, might influence their willingness to accept treatment. Ultimately, the integrity with which that treatment is dispensed may also be affected. Thus the likelihood that an intervention will directly improve a child's condition may be constrained by factors related to popular beliefs about the severity of the child's problems. Other factors for consideration are the availability of alternative treatments, time and effort required for treatment implementation and attitudes regarding the reported effectiveness of the treatment. Potential adverse side effects of the treatment, and the previous experience that the individual has accrued with the particular treatment are also factors that may impact on treatment efficacy (Cross-Calvert and Johnson, 1990; Elliott, 1988).

### **Purpose**

It is evident there are widespread concerns about the use of medications with young children. There are also differences of opinion about the appropriateness of medicating these children. The impact of these differences of opinion should be of concern to professionals because teachers and parents are involved in the development of effective intervention strategies for these children in the school and home environments. Therefore, research that investigates parent and teacher attitudes is important from a practical perspective because this has particular relevance for the beneficial effects of treatment intervention.

The purpose of this current study was to survey and compare the attitudes of parents and teachers toward pharmacological intervention in the management of the

primary school child who is affected by ADHD. The focus of this study was on the child's cognitive, social, emotional and organizational behaviours.

### **Definitions**

Several key terms will be used a number of times in this thesis, therefore definitions of these terms are given below.

#### *ADHD*

*Attention-Deficit Hyperactivity Disorder (ADHD)* is defined by Reber (1995):

A disorder characterised by hyperactivity, attention deficits, and impulsivity. Although it is first manifested in childhood, it may not be diagnosed until later in life. It is a fairly common disorder and over the years various terms have been used for it and for disorders occasionally thought to be related. Included here are descriptive terms such as *attention-deficit disorder (ADD)*, *hyperkinesis*, *hyperkinetic syndrome*, and *hyperactive child syndrome*, as well as others that imply some organic dysfunction like *minimal cerebral dysfunction*, and *minor cerebral dysfunction*. Also called *attention-deficit disorder with hyperactivity (ADHD)*. (p. 66)

Barkley (1989) defines ADHD as:

A developmental disorder of attention span, impulsivity and/or overactivity, as well as rule governed behaviour, in which these deficits are significantly inappropriate for the child's mental age; have an onset in early childhood; are significantly cross situational or pervasive in nature; are generally chronic or persistent over time; and are not the direct result of severe language delay, deafness, blindness or childhood psychosis. (p. 72)

The most recent classification of the disorder from the DSM-IV (1994) states that the diagnosis of ADHD needs confirmation in two settings, both in the home and

the school environment. The DSM-IV (1994) identifies three differential types of the disorder. The first, the *attention deficit hyperactivity disorder: predominantly inattentive type* relates to individuals who must display at least six symptoms consistently exhibited over a period of at least six months. These are: (i) fails to give close attention to detail; (ii) makes careless mistakes; (iii) has difficulty sustaining attention in tasks or activities; (iv) does not seem to listen to what is being said to him or her; (v) does not follow through on instructions and fails to finish school work; (vi) has difficulty organising tasks and activities; (vii) avoids or strongly dislikes tasks that require sustained mental effort; (viii) loses things necessary for tasks or activities (e.g., pencils, books.); (ix) easily distracted by extraneous stimuli, and (x) forgetful in daily activities. For the purpose of this research thesis, attention deficit hyperactivity disorder: predominantly inattention subtype, will be referred to as ADHD(Ina).

This type may also be designated as *undifferentiated attention deficit disorder*. These individuals display the primary signs of attention deficit or inattentiveness without the signs of hyperactivity. Studies of this group on ADHD(Ina) children have shown that they suffer from more anxiety and learning problems and have a qualitatively different inattention trait than those children belonging to the condition *attention deficit hyperactivity disorder, predominantly hyperactive*.

The second, the *attention deficit hyperactivity disorder: predominantly hyperactive-impulsive type* refers to students who display at least six symptoms consistently over a period of at least six months. These are: (i) fidgets with hands or feet or squirms in seat; (ii) leaves seat when remaining seated is expected; (iii) runs about excessively; (iv) has difficulty engaging in activities quietly; (v) talks excessively; (vi) acts as if "driven by a motor" and can not remain still; (vii) blurts out answers to questions before the questions have been completed; (viii) has difficulty

waiting in lines or waiting turn in group activities, and (ix) interrupts or intrudes on others. For the purpose of this research thesis, attention deficit hyperactivity disorder: predominantly hyperactive impulsive subtype will be referred to as ADHD(Hyp).

The third, the *attention deficit hyperactivity disorder: combined type* related to students which must display the characteristics of both attention deficit hyperactivity disorder: predominantly inattentive type, and attention deficit hyperactivity disorder: predominantly hyperactive-impulsive type. For the purpose of this research thesis, attention deficit hyperactivity disorder: combined type, will be referred to as ADHD(Com). Any general reference to attention deficit hyperactivity disorder that does not distinguish between the three sub-groups will be referred to as ADHD.

#### *Pharmacological Management of ADHD*

For the purposes of this study, *pharmacological therapies* and *pharmacological management* will be defined as the treatment of ADHD by means of drugs (e.g., Pharmacotherapy). The term *stimulant medication* is used in this research to refer collectively to all drugs that are used in the treatment of ADHD. The term *stimulant* is defined by Reber (1995):

A drug with arousing, altering, stimulating properties. Included in this large category are powerful amphetamines, methylphenidate, cocaine. All produce, in varying degrees, alertness, talkativeness, enhanced physical performance for gross sensorimotor acts, increased confidence and a diminution of appetite. (p. 756)

#### *Attitude*

For the purposes of this research, the term *attitude* is defined as a consciously held belief or opinion.

*Attitude* is defined by Reber, (1995):

Contemporary usage generally entails several components, namely: *cognitive* (consciously held belief or opinion), *evaluative* (positive or negative), *affective* (emotional tone or feeling), and *conative* (disposition for action). (p. 67).

### *Treatment acceptability*

*Treatment acceptability* has been defined by Kazdin (1985):

Judgments by laypersons, clients, and others of whether treatment procedures are appropriate, fair and reasonable for the problem or client. (p. 267).

### **Overview of Thesis**

The following chapter is a review of the relevant research on which this current study is based. This chapter deals with the relevant general literature pertaining to the efficacy of pharmacological interventions in the treatment of the child with ADHD, followed by more specifically relevant literature concerning parent and teacher attitudes to pharmacological intervention and analysis of parent and teacher perceptions of ADHD. These studies have been considered in relation to one another and conclusions have been drawn from them. The Hypotheses are at the end of this chapter.

The next chapter is the method chapter. This chapter describes the participants in the study and gives a description of their relevant characteristics. The procedure and instrument used has been identified and described. The study's design has been outlined and the proposed statistical analyses considered. The results chapter outlines the statistical information that was gained by the research. The results obtained from the study have been described in terms of differences between the attitudes of the groups included in the study.



Following the results chapter is the discussion chapter. This chapter expands on the results chapter and discusses the results in relation to previous research. This chapter gives possible explanation for the results obtained and discusses implications for further research and the education of students with ADHD.

## **CHAPTER TWO**

### **Literature review**

This chapter explores previous research on which the current study is based. To enable the reader to form a comprehensive view of the disorder ADHD, information regarding the associated features of ADHD, predisposing factors and developmental history of children with ADHD has been outlined at the beginning of this chapter. Incidence rate and the history of the development of treatment interventions is also included in the initial section of this chapter. A theoretical framework for the study has been identified and outlined.

The research study under investigation forms the intersection of two areas of research. The efficacy of pharmacological intervention, forms an integral part of the background to the topic of attitudes toward the pharmacological management of children with ADHD. Therefore, for the purposes of clarification, the next section includes some recent literature pertaining to the efficacy of pharmacological interventions in the treatment of children with ADHD. This will be followed by closely related literature, concerning parent and teacher attitudes to pharmacological intervention.

The focus of this chapter moves from the efficacy of pharmacological interventions in the treatment of the child with ADHD to the attitudes toward the efficacy of these treatments. This previous research has been analyzed and considered for inclusion in the review based on the degree of relevance to the proposed research investigation.

### **The Incidence of ADHD**

The incidence of ADHD is greater for children with biological parents displaying characteristics of the disorder than for the general population. Goodman and Stevenson (1989) and Welner, Welner, Stewart, Palkes and Wish (1977) report findings that 60% to 70% of the relatives of children with ADHD display similar deviant characteristics, and 30% to 50% of these relatives' siblings also display similar characteristics. Barkley (1990) cites that 25% of these children appear to have specific learning disabilities.

### **Treatment and Intervention**

There is no known "cure" for ADHD, however symptoms of the disorder can be managed. Since ADHD affects the child across different environmental settings, effectively a multi-modal treatment approach is required to assist the child behaviourally, educationally, psychologically, and pharmacologically. Treatment approaches are designed to minimise the effects of the child's symptoms by managing them rather than trying to alter the basic nature of the child (Fowler, 1992). Barkley, DuPaul and McMurray (1990) note a number of categories of treatment interventions. Table 1 shows established interventions for children with ADHD. Table 2 shows possible treatment interventions for children with ADHD.

Table 1

*Established Treatment Interventions for children with ADHD*


---

| Description  |
|--|
| Parent counseling about ADHD                                     |
| Parent training in Child Management                              |
| Parent training in adolescent management                         |
| Parent/Adolescent Problem solving-<br>and Communication Training |
| Pharmacological Therapies  |
| Teacher Counseling about ADHD                                    |
| Teacher Training in Classroom Management                         |
| Special Educational Services                                     |
| Individual Counseling, as needed                                 |
| Residential Treatment  |
| Parent/Family Interventions                                      |
| Parent Support Associations                                      |

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source. From "Manual to Accompany the Parent's workshop on Attention Deficit Hyperactivity disorder in Children," Russell A. Barkley, 1995, Department of Psychiatry, University of Massachusetts Medical Center Worcester, MA 01655, p. 12.

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Table 2

*Possible Treatment Interventions for Children with ADHD*


---

| Description                          |
|--------------------------------------|
| Dietary Management                   |
| Megavitamin/Orthomolecular Therapies |
| Sensory-Integration Therapy for ADHD |
| Chiropractic Manipulations           |
| Ocular Motor Exercises/Optometrics   |
| Traditional Play Therapy             |
| Relaxation Training/EEG Biofeedback  |
| Neurofeedback/EEG Biofeedback        |
| Self-Control Training in clinics     |
| Social Skills Training in clinics    |

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source. From "Manual to Accompany the Parent's Workshop on Attention Deficit Hyperactivity Disorder in Children," by Russell A. Barkley, 1995, Department of Psychiatry, University of Massachusetts Medical Center Worcester, MA 01655, p. 12.

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There are many possible treatments for ADHD. However, only the pharmacological treatment interventions will be discussed in this study because the research focus is on parent and teacher attitudes to pharmacological treatments.

### **Pharmacological Treatments and Their Effectiveness**

Three major categories of medications are commonly used in the treatment of ADHD. These include the psychostimulants, antidepressants and arousal-modulating medications. Psychostimulants are drugs that are used to enhance neurotransmission within the central nervous system. The psychostimulants include methylphenidate, amphetamine, and magnesium pemoline. Psychostimulants are the most frequently prescribed (Barkley, 1990). They have powerful effects on focusing and sustaining attention, and some effects on enhancing memory storage and retrieval.

Psychostimulants reduce overall activity and increase the focus of action. They enhance fine motor control relevant to reading, writing and speaking. They have significant anti-aggressive effects in subjects who are not severely aggressive (Epstein, Singh, Luebke and Stout 1991). Major medications used in the medical treatment of ADHD include the psychostimulant drugs (ritalin, dexadrine/dexamphetamine and cylert).

It is useful to consider the effects of stimulant medication in relation to the effects of other forms of management for the child with ADHD in order to establish the merits of these interventions. There have been several studies conducted in the 1990s that have attempted to address this issue.

Separate and combined effects of psychostimulants and behaviour modification on boys with ADHD in the classroom were investigated by Pelham, Carlson, Sams, Vallano Dixon and Hoza, (1993). The separate and combined effects of behaviour modification and two doses of methylphenidate compared with baseline (no behaviour modification and a placebo) were observed. The classroom behaviours and academic performance of 31, 5-to 9-year-old boys with ADHD attending an 8-week summer treatment program were investigated. The authors of the study advocate that the

manipulation of all possible combinations of treatments is necessary to address critical questions regarding the efficacy of combined treatments. Specifically of interest to them was the incremental value of the combined compared with the separate treatment baseline. If a child is receiving medication, is the addition of behavioural intervention useful? Conversely, if a child is receiving behavioural intervention, does medication offer additional efficacy?

Findings were consistent with previous research. Behaviour management (BM) and methylphenidate (MPH) each separately improved the classroom behaviour of ADHD boys, although only MPH had a beneficial effect on the children's academic performance. The combination of the two treatments was more effective than BM alone but limited improvements were observed beyond that of MPH alone. Measures of individual responsiveness showed that a) children's degree of responsiveness to the two treatments was similar within children; b) individual responsiveness to MPH was, on average, more than twice as great as individual responsiveness to BM; and c) there were individual differences in response to the combination treatment such that the combined interventions yielded improvement beyond that afforded by BM for 78% of the boys, whereas 41% of the boys benefited from the combined treatment compared with the low dose of MPH alone.

Classroom academic performance was observed by Elia, Welsh, Gullotta, & Rapoport (1993). This report investigated the effects of methylphenidate (MPH) and dexamphetamine (d-AMPH) stimulants on academic functioning. Performance on a widely employed reading and math skill series was assessed during a double-blind cross-over study of MPH and d-AMPH and placebo.

The subjects were 33 medically diagnosed boys with ADHD aged from 6 to 12 years. Subjects were studied during an 11-week out-patient hospital programme. A



within-subjects design was used for both d-AMPH and MPH, a wide dose range was used, and the study was conducted in a naturalistic setting. The study supports other short-term studies indicating improved classroom performance with both stimulants.

The children attempted more reading and math problems with both drugs compared to placebo. They obtained a greater percentage of correct responses in a complex math function with d-AMPH and had a greater percent correct in one of the reading series designed to develop skills in recalling factual information from a single reading with MPH. Subjects also made fewer errors on MPH for both the arithmetic tasks and cognitive task. The results indicated no differences between the three drug conditions with regard to simple addition and subtraction tasks, however, on tasks requiring greater attentional resources eg. (mathematical manipulations), performance improved with medication.

Methodological issues in assessing the relationship among ADHD, medication effects and reading performance was of particular interest to Cherkes-Julkowske, Stolzenberg, Hatzes and Madaus (1995). These researchers conducted a study involving participants over a period of four years. Participants were medically diagnosed children with ADHD. All of them were of normal intelligence and suffered no psychiatric disorders or neurological impairment. Participants naturally fell into two categories, medicated and non-medicated, and were further randomly subdivided into those who were optimally medicated and those taking no medications at all.

Findings indicated that in subgroups of children with ADHD who were taking medications and who did not have language disorders, there was marked improvement in reading comprehension (in comparison to the non-medicated group). This is an important finding in its own right, since so much of school functioning is dependent on reading comprehension. This positive effect of medication should therefore impact

on all the content areas of school functioning. The difference in medication effects for children who had both language and attention dysfunction is also important, because medicated students with ADHD and language problems tended to do slightly more poorly in reading performance. This finding was particularly evident in the upper primary grades. This may indicate that enhancement in the controlled cognitive aspects of attention with children who are affected by ADHD, may improve the child's capacity to cope in other areas such as classroom organizational aspects of behaviour.

Many children with ADHD also exhibit comorbid conditions such as depression, motor tics, and tourettes syndrome (Epstein, Singh, Luebke and Stout, 1991). As well as the psychostimulants, there are other medications that are used in the treatment of ADHD when these other conditions, are adversely affected by the use of psychostimulants. A brief outline of these medication follows, however, as the current research is concerned primarily with the attitudes of parents and teachers to the psychostimulants, research regarding the other medications has not been included in this study.

The *antidepressants* are drugs used to treat depressive disorders. The antidepressants include tricyclic antidepressants (such as imipramine, amitriptyline, and desipramine), other antidepressants (bupropion, monoamine oxidase inhibitors) and the newer selective serotonin re-uptake inhibitors (SSRIs, fluvoxetine, sertraline, piroxetine). The antidepressants have mood enhancing and calming effects. These medications however, appear to be less potent in focusing attention and diminishing distractibility (Epstein, Singh, Luebke and Stout 1991). Antidepressant medications are widely prescribed.

The *arousal modulating medications* act specifically to diminish the release of noradrenaline. These medications, clonidine and guanfacine, reduce activity and appear to decrease aggression. They enhance frustration tolerance and minimise withdrawal side effects from psychostimulants. The arousal medications are used less frequently in the medical management of ADHD. The relevance of this pharmacological diversity is that these medications have distinctly different mechanisms of action. They also differ in their capacity to improve selected components of ADHD (Rostain, 1991).

Barkley (1991) outlined the limitations of prescription drugs in their ability to yield a positive response in ADHD individuals. Investigation revealed that ritalin produced a noticeable improvement in the observable behaviour of 77% of children, dexedrine/dexamphetamine in 74% and cylert in 73%. For the remainder of affected individuals, stimulant medication had no noticeable improvement in observable behaviour. The behavioural effects of stimulants were found to be considerable, these included increased attention span and concentration, decreased impulsivity, decreased task-irrelevant activity level, decreased aggression, increased compliance, improved handwriting and fine motor skills, and improved peer relations and social status.

The side effects of stimulant drugs vary considerably between individuals. Barkley (1991, p. 11) states the following side effects and the percentage of individuals affected: "Insomnia and decreased appetite occur in 50-60% of children, headaches and stomachaches in 20-40%, increased crying in 10%, nervous mannerisms in 10%, tics and tourette's in less than 5%, failure to tolerate any dose in 3%. No effects were reported on skeletal growth. Mild increases in heart rate and blood pressure were reported in some cases." Cylert has been known to affect liver functioning and

must be monitored. In almost all cases however, these effects are transient and/or easily handled by decreased dose. (Elia, Welsh, Gullotta and Rapoport, 1993).

Authority to prescribe psychotherapeutic drugs is restricted in Australia. Stimulants cannot be prescribed without authority from the State Department of Health. Authority has only been granted to specialist paediatricians, psychiatrists, child neurologists and nominated doctors who have a special interest in the area. In most states, the prescription of stimulants after the patient reaches 18 years of age can only come from a psychiatrist.

The decision to medicate a child with ADHD rests solely with the parents or primary care giver. This decision however, is generally made under the guidance of a variety of professionals, which include the family physician, paediatrician, and a child psychologist. In ideal circumstances collaborative consultation should occur with involvement of the child if age permits (Parker and Storm, 1994). Decisions regarding the length of treatment for the child with ADHD, are usually made by the parents. Medication is generally required for as long as the parents continue to see significant benefits. For some, this will be 6 months, others 2 years, and some until the end of school or beyond. As the beneficial effects of stimulants in adults with ADHD become recognised in Australia, it is possible that a number of children will continue taking stimulants for most of their lives (Green and Chee, 1994).

### **Concerns about Pharmacological Treatments for ADHD**

Theoretical concerns regarding the side effects of stimulant medication have been raised, especially considering the possibility of addiction. Though used in children with ADHD for over half a century, there is no evidence of drug dependency or an increased risk of later substance abuse (Green and Chee, 1994).

Psychostimulants are not always tolerated by children, and clinically it has been found

that some children respond with irritation and anxiety to a typical dosage of medication. These children tend to have histories of hyperarousal, including tactile defensiveness, difficulties with transition, and tendencies toward agitation. Many of these children have achieved a higher degree of functioning, with continued pharmacological intervention consisting of the combined use of stimulants and antidepressants (Cherkes-Julkowski, Stolzenberg, Hatzes and Madaus, 1995). The results of numerous double-blind trials show that between 60% and 90% of children with ADHD will show improved behavioural responses to stimulant medication (Pelham et al, 1993). This response is only documented in the short-term; the long-term benefits of medication are unknown.

Jacobvitz (1990) cites that pharmacological approaches to treatment and management of ADHD, has raised concern among educators and other professionals in Australia. Increasing numbers of parents of children with ADHD are opting for pharmacological approaches to treatment and management of the disorder and little attention is given to the behavioural, educational and psychological approaches. The following controversial issues have been raised. Issues include: the reliability of diagnoses for ADHD, particularly at very early ages; the severity of side-effects in some children; the expectations of some teachers, parents, and children themselves that the child won't be able to behave unless they have taken their medication; the use of medication as an excuse for not teaching the child appropriate behaviours; and the ease of ability to exploit the system and diagnostic process by some older children and parents who have drug dependency. Jacobvitz (1990) urged that greater caution and more restriction should be shown in the use and prescription of stimulant treatment.

Whalen and Henker (1991) propose that, given the limitations of stimulant drugs, they should rarely if ever be used exclusively. Swanson, Cantwell, Lerner,

McBurnett, Pfiffer, and Kotkin (1992) investigated the limitations in the use of stimulant medication to treat children with ADHD. Suggestions were that stimulant medication may be overused in the United States and the short length of action may critically limit the benefits of typical treatment with stimulants. Furthermore, high doses may produce toxicity, and invoke adverse responses in some children with ADHD.

Placing any child on psychostimulant medication is a decision that must be weighed carefully, and based on thorough evaluation with a clear understanding of the target behaviours and ultimate goals of the treatment programme. To increase the likelihood of success, those treating the child should follow a collaborative team model that includes clear and direct communication among all concerned with the treatment process, including the parents (Roberts, 1986).

This raises other issues of concern, such as who should be responsible for the evaluations of the medication process. The economics of *real-life* practice make this an almost impossible task from an educational perspective. The aim as educators is not to obtain acceptable reduction in the behavioural symptoms of ADHD, but rather to identify and implement methods that will positively affect cognitive functioning and maximise social outcomes for these children. Then, the issues raised through this thought provoking research are of real concern to professionals in education. If regular classroom teachers are considered to be a valuable link in the collaborative intervention process for the child affected by ADHD, then valid issues of concern such as teachers' attitudes toward ADHD and treatment interventions are particularly relevant to professional responsibility.

### **Treatment Acceptability**

Brown, Dingle and Landau (1994) reviewed a body of recent literature regarding attitudes and beliefs about medication held by parents, teachers, and children. The authors' state: "When considering the merits of psychopharmacologic intervention for children's behavioural disorders, the notion of 'treatment acceptability' emerges as an important consideration." (p. 16).

Kazdin (1980) suggested that attitudes held by consumers regarding the appropriateness of the treatment might influence their willingness to initially accept the treatment, and ultimately the integrity with which that treatment is dispensed. This suggests the likelihood that a treatment programme directly assists the child with ADHD may be affected by factors related to teachers' and parents' beliefs about the severity of the child's problems. Other factors may be the availability of alternative treatments, time and effort required to administer the treatment, reported effectiveness, potential side-effects, and previous experience with the particular treatment (Cross-Calvert & Johnson, 1990; Elliot, 1988).

Children with ADHD present consistent home and school-based problems. Parents and teachers are therefore, generally responsible for implementing the treatment and monitoring the medication effects for these children. Brown, Dingle and Landau (1994) found clear indication that psychostimulant treatment for ADHD had provoked concern and controversy among parents.

Clinical reports outline the imperfect relationship between recommendation for this treatment and its implementation. Reports indicated that parents may be inconsistent in stimulant administration and others may discontinue medication prematurely. Cross-Calvert and Johnson (1990) and Liu, Robin, Brenner, and Eastman (1991) surveyed mothers of children diagnosed with ADHD and children

who were non-referred, regarding medication acceptability, behaviour modification, and their combination in the treatment of ADHD. In spite of numerous reports of medication efficacy, results indicated that both groups of parents rated behaviour modification as the most acceptable, and pharmacological intervention the least favourable.

Mothers' knowledge of the disorder was found to significantly influence their attitudes toward pharmacological intervention for the child with ADHD. If knowledge plays a significant role in the formation of attitudes then perhaps increase in knowledge may influence attitudes toward pharmacological intervention. Slimmer and Brown (1985) sought to determine if a decision-making conference facilitates the treatment acceptance process and reduces an initial negative attitude towards medication. Results indicated that a mothers decision to try medication for her child became more positive after mothers were encouraged to express feelings of guilt about the disorder, consider all treatment alternatives, and eventually rank order treatment options.

Stine (1994) studied psychosocial and psychodynamic issues affecting non-compliance with psychostimulant treatment. It was determined that a variety of psychosocial factors may influence compliance with stimulant treatment, including the child's oppositional behaviour or passivity, parental concerns about medication safety, parental reactions to the child's illness, media misinformation, and the stigma of medication treatment.

Summers and Kaplan (1987) found that societal attitudes about the propriety of certain medical interventions might influence parental decisions to medicate. These researchers surveyed the general public about the relative merits of stimulant medication and anticonvulsant medication. Results indicated that parents felt more



justified in the use of medication for the epileptic child, whose disorder they considered of organic etiology. In contrast, participants felt that in the case of a child with ADHD, the disorder was more likely of psychosocial origin. That is, it was perceived that the child was able, but not willing to control his problems. Participants had a more negative attitude toward medication for the ADHD child and indicated that medication may even exacerbate the child's symptoms. Given that most children on medication require a dose during school hours, and that parents need to communicate with teachers regarding school-based medication effects, the educator's knowledge of and attitudes about pharmacological interventions should also be considered.

#### **Attitudes of Teachers**

Epstein, Matson, Repp and Helsel (1986) surveyed teacher attitudes to medication, behaviour modification, counseling, special education programming, and effective education. Both groups of subjects indicated that special education was the most acceptable, and medication the least acceptable form of intervention for the child with ADHD.

Malyn, Jenson and Clark (1993) recently compared medication beliefs among regular educators, special educators and school psychologists in relation to their knowledge about efficacy and side effects of stimulants in the treatment of ADHD. They were also asked how likely they would be to suggest to a parent that stimulants be considered for their child with ADHD.

Results indicated that even though the vast majority in each group responded that stimulant treatment would be beneficial for most children with ADHD, participants did not usually suggest this treatment alternative to parents. Only 35% of the school psychologists surveyed and 55% of regular and special educators, indicated

they would tell parents about stimulant treatment, even though 82% of the school psychologists believed it would benefit most children with ADHD.

Jerome, Gordon and Hustler (1994) indicated that the knowledge and attitudes of teachers regarding ADHD, are often neglected factors in compliance with psychostimulants. The authors noted that school personnel are very frequently not in contact with the treating physician regarding medication management and monitoring. In a sample of 439 American and 850 Canadian classroom teachers, only 14% had been involved by the prescribing physician in the process of diagnostic evaluation and the ongoing monitoring of medication. While most teachers in the study accepted the diagnosis of ADHD, many felt the need for further education about ADHD.

Some common myths were still prevalent. Many teachers still believed the condition could be effectively managed by special diets, that medication was no longer effective after puberty, and that most patients outgrew the disorder by adolescence. The effect of teachers' information and attitudes on parent and children's decisions to follow through on medication trials is likely to be a critical factor in most cases.

Attitude theory designates knowledge as a key factor in the formation of attitudes, it is therefore useful at this stage, to consider the effects that teachers' knowledge might have on their formation of attitudes toward ADHD and the medical management of the disorder. Reid, Vasa, Maag and Wright (1994) studied teachers' perceptions of ADHD. Little attention has focused on the problems the classroom teacher may face educating students with ADHD and how prepared general education teachers are to work effectively with these students. There is little disagreement that teachers need training in ADHD (Piffner and Barkley, 1990).

The Reid research study (1994) purposed to gather data pertaining to teachers' self-efficacy in working effectively with children who have ADHD, and teacher

perceptions of realistic, practical intervention methods for children with ADHD.

Participants were 3,000 elementary public-school teachers in Nebraska who worked with third grade children with ADHD.

Data were gathered in the form of a questionnaire designed to tap two aspects of teacher perceptions regarding ADHD. The first was perceptions of barriers to effective programming for instruction, and the second, confidence in attaining instructionally relevant goals. Barriers were selected to reflect possible practical difficulties that could be encountered by classroom teachers. This is of relevance to the current study because teacher attitudes toward the practical application of intervention methods in the classroom may influence their attitudes toward and acceptability of certain intervention methods.

Results indicated that each of the following dimensions was perceived as at least somewhat important: time to administer specialised interventions, lack of training, class size, and severity of problems. In terms of the first barrier, interventions such as positive reinforcement, token economies, contingency contracting, response cost, and time-out, were perceived by teachers as impractical for use, especially with specialized problems because of the time required to implement them effectively. This indicates that if these interventions are perceived as unrealistic or requiring too much time to implement, then they are unlikely to be used in practice. Findings of this nature may provide information regarding teacher perceptions concerning practical limitations of certain intervention methods. This may enhance teacher attitudes toward more practical, less time consuming intervention methods such as the pharmacological approach.

Lack of knowledge and teacher training was the barrier most frequently selected as important. This could indicate deficiencies in teacher training programmes and

amount or quality of information available to teachers entering the field. This is also relevant to the current research investigation, from the perspective that attitude theory cites 'knowledge' as a major influential factor in the formation of attitudes. Lack of communication with a physician was rated high by teachers with prior experience, in the Reid et. al. (1994), study. This concern is important for teachers, as young children frequently need medication dosage adjustments to maintain optimal response (DuPaul and Barkley, 1990).

Factors such as teacher perceptions of responsibility for administration of medications during school hours and lack of communication with other professionals involved in the decision-making process for children with ADHD, may also affect teacher attitudes toward pharmacological approaches. These factors may have significant impact on the formation of teacher attitudes toward medication, particularly if they are perceived as impractical or considered outside of the regular classroom teacher's area of duty and responsibility.

The results of the Reid et al. (1994) study were considered by the authors to be preliminary, due to lack of follow up of non-responders. It is evident that teachers themselves felt that they were not adequately prepared to meet the needs of these individuals in the classroom situation and that they lacked knowledge concerning those needs. This raises the issue of teacher acceptability of intervention methods, as it is clear from these findings that if interventions are perceived by teachers as being unrealistic or time-consuming, then they are unlikely to be implemented in practice.

It would be useful at this stage to consider research that specifically targets teacher attitudes toward the use of pharmacological intervention methods with children. Observing the results of previous literature in this area, may reveal issues of concern among teachers, regarding the use of medication with children who have

ADHD. Psychopharmacological intervention and teacher perceptions of psychotropic medication for students with learning disabilities, were investigated by Epstein, Singh, Luebke and Stout (1991). They were concerned with the perceptions, knowledge, and opinions of teachers of students with learning disabilities regarding medications used by their students. Although this was an investigation into drug therapy for individuals with learning disabilities rather than ADHD as such, the results of this study are highly related to the issues of concern for children with ADHD and treatment intervention acceptability.

One hundred and fifty-four teachers, all members of the Illinois Council for Learning Disabilities, were chosen to participate in the study. They were sent a survey by mail, and this was completed and returned to the researchers. The survey was divided into three parts: The first related to demographic characteristics of the teachers, the second dealt with drug-related questions, and the third dealt with teachers' knowledge of current school policies and practices related to drug therapy for students with learning disabilities (LD).

Results indicated that a significant number of the teachers said that they would like to receive additional training in drug therapy as it relates to students with LD. Over 50% of the participants viewed such training as extremely necessary and viewed their professional preparation at the pre-service and in-service levels as being 'totally' inadequate. The opinions of teachers of students with LD were sought in only one third of the decisions made about medication, yet over 80% of the teachers believed that their views should be taken into account. Teachers involved in this study were also asked to rank seven childhood disorders that may lead to drug treatment. ADHD was ranked second after delusions and hallucinations. ADHD was ranked most highly when teachers were asked which disorders usually lead to a recommendation for drug

treatment, followed by acting out, anxiety, aggression, and delusions. Social withdrawal and depression or sadness were ranked as the least likely factors leading to drug therapy. Only 34% of the participants viewed behaviour management as a suitable alternative to stimulant therapy in dealing with ADHD in the classroom setting. The researchers suggested that these results indicate that teachers view stimulant therapy as a common management intervention for the child with ADHD in the classroom.

Kasten, Coury and Heron (1992) endeavoured to determine teachers' knowledge of the beneficial effects and potential side effects of stimulants. They also compared the knowledge of special educators, who were more likely to have received additional instruction about ADHD and its treatment, with that of regular teachers. The researchers also documented teachers' attitudes about the use of stimulants and the kinds of advice they might give parents about using stimulants.

The subjects were teachers and administrators from two school systems. One was located in the suburb of Columbus in Ohio and the other in a rural community approximately 65 miles from Columbus. One hundred and ninety subjects were included in the study. Of the total number of participants, 26 were teachers from special education classes and 164 were from regular classrooms. The mean level of experience of all the teachers was 15 years.

The results of this study found that teachers surveyed did not have enough training or information to provide complete or accurate information about the effects of stimulants. The study also indicated that many teachers had little knowledge of the beneficial and undesired effects of stimulants. The special educators had more knowledge of the beneficial effects and undesired side effects than did regular classroom teachers. Despite the lack of accurate technical information, however,

teachers in this study frequently offered advice to parents about seeking stimulants for their children.

The researchers noted that due to the low 65% return rate of response to this study, the respondents might represent a group of educators who had a specific interest in ADHD. They also may have had a greater knowledge of the effects of stimulants, than might the remainder of teachers who did not respond to the questionnaire. Hence the knowledge level of educators in the school may have been overestimated.

The indication of a knowledge deficit among teachers is cause for concern, as the ability of teachers to provide accurate information to the physician and parent may be questionable. This is especially so, considering that over 70% of the teachers surveyed believed that teachers should take responsibility for reported side effects of medication to a parent or physician. Teachers' previous experience with students who have ADHD, may affect their attitude toward the use of stimulant medication as an appropriate intervention method for these children because a person's attitude may be influenced by their experience and knowledge base regarding that phenomenon.

Davino, Lehr, Leighton, Miskar, and Chambliss (1995) investigated teacher attitudes to stimulant medication by replicating and expanding the study by Kasten, et al. (1992). Teachers' knowledge and perceptions regarding students with ADHD and stimulant medication were assessed with items addressing attitudes toward drug therapy, causal factors, social correlates, and desire for teacher involvement.

The participants in the study were 206 teachers drawn from eleven elementary, middle and high schools. The schools were a part of the eastern Pennsylvania and the southern New Jersey school districts. The mean level of experience of the teachers was 19 years and the mean age of the teachers was 42 years. Over two thirds of the

sample were female. The teachers were evenly divided into elementary, middle, and high school groups for the study.

A majority of the respondents had worked with students who were affected by ADHD, and 94% had worked with students on medication at some point in their teaching career. Almost half of the participants thought that drug therapy should be used only as a last resort, a quarter of them were unsure, and the other quarter did not support the use of drug therapy. Half of the participants surveyed thought that stimulants improved the child's academic performance, but 40% were unsure. Thirty percent of teachers agreed that too many students receive stimulants. Over half of teachers surveyed did not know which side effects result from the use of stimulants in children with ADHD. Seventy-seven percent indicated a desire for high responsibility in helping students with ADHD.

Teachers who endorsed the use of stimulant medication were more likely to believe in genetic causal factors for ADHD. They were also more likely to believe that teachers should be responsible for observing and reporting side effects of medication, and more likely to have a positive view of the parent of a child with ADHD. Those showing high belief in the biological substrate of ADHD were less likely to blame inadequate parenting practices for making the symptoms of ADHD worse.

Nearly 80% of teachers in this study wanted to be given more responsibility in helping students with ADHD and 66% believed they should be responsible for monitoring medication. Facts worthy of consideration are that 56% of these teachers did not know which side effects result from the use of stimulants with children with ADHD, and half of them believed that stimulant therapy should only be used as a last resort. One could question the preparedness of these teachers to be given greater



responsibility for monitoring medication with these children due to their lack of knowledge regarding both the condition known as ADHD and the medical management of the disorder.

Power, Hess and Bennett (1995) investigated the teacher acceptability of behavioural and pharmacological interventions for children with ADHD. The author's state: "The success of a school-based approach to intervention depends not only on the potential efficacy of the treatment(s) being used but on teacher's perceptions of the acceptability of the intervention program." (p. 238).

Some studies have found that teachers prefer BM to medication for children with ADHD, particularly if they have associated behaviour problems. On the other hand Power, Hess and Bennett (1995), found that at least some teachers prefer medication where the child has been diagnosed as having ADHD and there are no associated behaviour problems. The study assessed the acceptability of behavioural and pharmacological interventions and identified factors that may influence teachers' acceptance of intervention strategies for children with ADHD.

Participants included in the study were 76 elementary teachers and 71 middle school teachers in Philadelphia. Questionnaires were administered to participants in a group format. Teachers were given a packet including the ADHD knowledge scale, followed by the vignettes and acceptability measures. Teachers were grouped differently depending on their years of teaching experience, however, the groups did not differ in respect to their knowledge of ADHD. The results of this study were consistent with previous research (Kazdin, 1981; Kasten, Coury and Heron, 1992; Liu, Robin, Brenner and Eastman, 1991), indicating that teachers prefer behavioural interventions using positive as opposed to negative consequences. The findings did

not consistently show that teachers believed that behavioural interventions were preferable to medication, as had been expected by the authors.

In the previous research by Liu, Robin, Brenner and Eastman (1991) the child in the vignette was not described as having ADHD but rather described as "verbally and physically abusive," which suggests the presence of a co-morbid condition not always associated with ADHD. In the case of the research by Power, Hess, and Bennett (1995), the child was identified as being medically diagnosed ADHD. Teachers' views about medication may be more favourable in cases where teachers perceive that a valid diagnosis of ADHD has been made. The results of this study strongly suggest that teachers vary with regard to their views about the acceptability of interventions for children with ADHD.

Generalisability of this study may have been limited to teachers working in suburban, middle class communities and to children with ADHD who do not display co-morbid conditions. Furthermore all of the teachers in this study had some experience with ADHD. In a sample with less ADHD-related experience a different pattern of results may have emerged.

If, as these studies suggest, teachers are more favourable toward behavioural management interventions than pharmacological management, then the issue of teachers' influence on parental decisions to medicate and teachers' responsibility for monitoring the effects of medication should be given further consideration. Furthermore, to ensure that they can responsibly and accurately make a referral to a psychologist or physician, school counselors and teachers should be thoroughly familiar with the diagnostic criteria and treatment interventions used in the diagnosis and management of ADHD in children.

### **Attitudes of Parents**

Parental attitudes to the medical management of ADHD in children, and factors that influence a parent's decision to medicate need to be given some priority in this area. Decisions regarding the choice of intervention rest solely with the parents of the child medically diagnosed with ADHD. Therefore, investigations such as those conducted by Kottman, Robert and Baker, (1995) have been important in finding out what these parental attitudes are. These researchers conducted a survey to investigate several of the issues affecting parents and families of children with ADHD. Motivation for this research stemmed from the authors' concern in understanding the perspectives of parents and children with ADHD. They advocated that this type of research would be of benefit to school counselors and other educators in their efforts to communicate with these parents and to help the child with ADHD. This study was conducted to gain information regarding parental perspectives on the identification and treatment of ADHD.

The survey sought information regarding subjective experience of parents and their attitudes toward themselves, their children and professionals who have interacted with their families. Most items consisted of open-ended questions. Participants initially numbered 506 members of a statewide association for parents of children with ADHD. A total of 110 parents completed and returned the survey, of whom 88% were mothers and 94% were tertiary educated Caucasians, from high socioeconomic levels.

Results indicated that although the diagnosis of ADHD was usually made by paediatricians or psychologists, school personnel, especially classroom teachers, frequently suggested this diagnosis to the parents. The survey included a question on the types of treatment parents had tried. The respondents who used rank ordering

reported an average of four intervention approaches, including medication, parent training, educational intervention, psychotherapy and diet modification. Medication emerged as the most frequently used intervention and as the most effective treatment.

Many participants indicated concern about their child's academic ability, self-esteem, future adjustment and lack of social skills. Most of the parents listed multiple concerns, which seemed to reflect continuing stress in the task of parenting these children. The most often cited resource that had not been helpful was schools and school personnel. Of the parents surveyed 33% stated that the educational system had not been a positive force in their lives or their children's lives.

Other negative factors included unsympathetic physicians, diet modification, advice givers, and medication. Twenty-three percent of parents wanted more information on how to work cooperatively with their child's school and 21% wanted to learn how to be a child advocate with teachers, school personnel and extended family members.

The results of this study are enlightening especially as respondents to this survey probably had enhanced awareness and ability to access resources. The concerns raised here may even be more important to other parents who are not as knowledgeable of the social support systems.

Parents are responsible for making decisions concerning their children and must provide consent prior to the initiation of pharmacological intervention. Parents are also responsible for the administration of psychotropic medications to children and the management of these medications, therefore parental attitudes toward the pharmacological management of children with ADHD is worthy of investigation. This is especially so, considering these decisions affect the emotional/ behavioural, cognitive/academic, social and classroom organizational behaviours of these children.

Schools provide an optimal environment in which to observe the effects of medications upon cognition, learning and behaviour. This information is vital since children spend so much of their time in school, and the extent of their education strongly influences their future quality of life. The acceptability of teachers and parents toward the use of stimulants with children who have ADHD, clearly plays a significant role in the medical issues of medication consent and compliance.

### **Conclusion**

The preceding discussion suggests that parent and teacher attitudes play a significant role in the decisions that are made regarding treatment intervention for the child with ADHD. Little research has been conducted in the area of parent and teacher attitudes toward the medical management of ADHD, particularly in Australia. This research is important because Australian research of this nature may establish whether attitudinal differences found in the United States also exist in Australia. Previous research regarding parent or teacher attitudes toward the use of stimulant medication in the management of children who have ADHD, has not compared the attitudes of parents with those of teachers. Identifying if differences exist between people is important because differences in attitude may impact on the choices parents and teachers make regarding the management of the child with ADHD in the classroom and home environments. If significant differences are found to exist between parents and teachers regarding the pharmacological management of these children, then this may highlight areas for future research regarding issues of concern about the use of medication with children who have ADHD. This may ultimately identify the need for change in the provision of services to parents and teachers of children with ADHD. Service provision and quality of care for the child with ADHD

may be impacted by research of this nature, because parents and teachers play a crucial role in the development of intervention programmes for these children.

Parents and teachers also play a crucial role in the management of the emotional/behavioural, cognitive/academic, social and classroom organizational behaviours of the child with ADHD. Research of this nature may illuminate reasons for action and provide information on teacher and parent interpretations of the use and effects of stimulant medication on the emotional/behavioural, cognitive/academic, social and classroom organizational behaviours of the child with ADHD.

The purpose of the current study was to survey and compare the attitudes of parents and teachers in country Western Australian schools, to see if significant differences in attitude exist. Unlike previous research, 'attitudes' in this current study were considered with respect to parent and teacher perceptions about the effectiveness of pharmacological intervention in the management of the child's emotional/behavioural, cognitive/academic, social and classroom/organizational behaviours.

It was predicted that there would be differences in attitude between the groups included in the current study. This prediction was made based on attitudinal theory (Tesser, 1993), which identifies key factors in the development of attitudes, such as exposure, conditioning and socialization.

Specifically, attitudes can be acquired from others (i.e. social learning) in the form of classical conditioning, instrumental conditioning, and modeling; as well as being acquired via direct experience with someone or something (Tesser, 1993). Social learning refers to the gradual acquisition of language, attitudes, and other socially approved values through reinforcement, observation, and other learning processes (Forsyth, 1995).

This definition implies that a person's interaction with others, such as parents, teachers, peers, relatives, newspapers, books, television, religious groups, etc., can affect their attitudes toward various things. This type of "learning" attitudes, occurs in the following three ways: the first is classical conditioning, which is a process of learning through association, involving the pairing of stimuli. When an attitude object is frequently paired with other objects or experiences that are pleasant or unpleasant, an attitude is formed toward that object (Baron & Burn, 1994). The second type of conditioning is instrumental conditioning. This technique is often used either consciously or unintentionally to form attitudes, for example, when praise, smiles, or other positive forms of recognition are given to a student who participates in class discussion, the result will be that the student will develop a positive attitude toward speaking in groups (Skinner, 1975). The third process of forming attitudes often occurs without intention. This process is frequently referred to as "Social Learning Theory" (Tesser, 1993). It suggests that behaviours and attitudes are acquired by observing and imitating the actions displayed by parents and peers (Bandura, 1969).

Finally, attitudes can be acquired from exposure to a particular object or by direct experience. Such direct experience, repeated over time, often results in a preference for that object when compared to objects less often encountered. The more familiar people are with the object or task, the more people generally like it (Bornstein, 1989). When asked to choose a preference for the way a task should be completed, for example, most people will select the method with which they are most familiar.

It is the theoretical basis for the current study, that might explain why parent and teacher attitudes toward the pharmacological management of children with ADHD might vary. This theoretical framework may also explain why some of the groups

included in the study are more or less positive toward the use of stimulant therapy than others. If this is how people form attitudes, then presumably, parents and teachers form positive and negative attitudes toward the use of medication as a result of positive or adverse experiences with their own children, with friends' children, children they have taught, and the community they move in. For teachers this includes the professional and school community as well as the wider community.

The groups included in the current research investigation, differed considerably in these key factors regarding their experiences with pharmacological management of children with ADHD. It would therefore be expected that the four groups included in the study, would develop different attitudes as a result of these factors.

It was predicted that there would be a significant difference between the attitude of parents and the attitude of teachers toward the use of stimulant medication with children who have ADHD. This prediction was made because teachers and parents differ in their knowledge and experience with ADHD and therefore attitudes toward intervention methods for children with ADHD may differ. It was predicted there would be a significant difference between the attitudes of parents of medicated children with ADHD, compared to the attitudes of parents of non-medicated children with ADHD. This prediction was made because it was felt that parental attitudes might have a significant impact on a parent's choice to medicate or not to medicate the child with ADHD. Parental experience with the success or failure of medication usage may also affect their attitudes toward stimulant use.

It was further predicted that parents of children with ADHD, would consider that stimulant medication should be used more frequently in the management of the child with ADHD, than would parents of non-affected children. Parental attitudes toward stimulant medication, may be made more positive with the acquisition of



knowledge regarding the disorder and the various treatment alternatives available to the individual. Parents of medically diagnosed children therefore may generally hold, a more positive attitude toward the use of stimulant medication as a result of having experienced the diagnostic process with their child.

### **Hypotheses**

The hypotheses made in this current research are as follows:

1. There will be a difference between parents' and teachers' attitudes to the use of stimulant medication in the classroom management of children with ADHD, with regard to the child's emotional/behavioural, cognitive/academic, social, and classroom organizational behaviours.
2. There will be a difference between the attitudes of parents of medicated children with ADHD, and the attitudes of parents of non-medicated children with ADHD, to the use of stimulant medication in the classroom management of these children, with regard to the child's emotional/behavioural, cognitive/academic, social, and classroom organizational behaviours.
3. There will be a difference between the attitudes of parents of non-affected children and the attitudes of parents of affected children, to the use of stimulant medication in the classroom management of children with ADHD, with regard to the child's emotional/behavioural, cognitive/academic, social, and classroom organizational behaviours.

## **CHAPTER THREE**

### **Method**

This chapter describes the participants who were involved in the study and their relevant characteristics. An outline is given regarding the selection of the participants and how they were chosen for inclusion in the sample. Following this, the instrument that was used to assess attitude is described, including information about the design of the questionnaire and the reasons for the inclusion of individual items. The procedure section of this chapter describes how the study was conducted. Information regarding how the data was analysed is included in the scoring section of this chapter. Ethical considerations are addressed in the final section of this chapter.

### **Participants**

One hundred and twenty participants from the Port Hedland, Pilbara district of Western Australia were selected to take part in the study. The participants were divided into four categories. The first group of participants consisted of 30 parents of children who had been medically diagnosed with ADHD but were not medicated at the time of the study. The second group of participants consisted of 30 parents of children who had been medically diagnosed with ADHD and were medicated at the time of the study. The third group of participants consisted of 30 teachers randomly selected from the current teaching staff of five government primary schools and one non-government primary school located in the Port Hedland school district. The fourth group of participants consisted of 30 randomly selected parents of non-affected primary school aged children. Table 3 shows the groups of participants included in the study and the abbreviations used to distinguish between these groups during the course of the study.

Table 3

*Groups of Participants in the study*

| Group | Description   | N   |
|-------|---|-----|
| 1     | Parents of non-medicated children with ADHD ( PNM ) | 30  |
| 2     | Parents of medicated children with ADHD ( PM )      | 30  |
| 3     | Teachers in regular primary schools ( T )           | 30  |
| 4     | Parents of non affected children (PNA)              | 30  |
| Total |   | 120 |

To allow for suitable comparisons without the possibility of a confounding gender variable, all participants involved in the study were female. In order to obtain participants in the first two groups, a note was sent to all parents of primary school children in the district, requesting willing participants to respond. The final samples for groups one and two were randomly selected from this group of 97 willing respondents.

The third group of 30 participants, were randomly selected from a total of 48 regular classroom teachers in the local school district. Teachers were then approached to participate in the research. All teachers initially approached participated in the study.

Participants for the fourth group were obtained by randomly selecting five parents from each of the six primary schools. These participants were approached face-to-face by the researcher and all were willing to participate.

## **Instrument**

The questionnaire was constructed by the researcher, and was designed to measure attitude using a Likert scale. The questions were randomly ordered according to behaviour (see Appendix A for the questionnaire). The total number of items included in the questionnaire was 20. The items were divided into four sub-scales according to the behaviour measured, these were, emotional/behavioural, cognitive/academic, social and classroom organizational behaviours. The items included in each sub-scale were as follows: emotional/behavioural, items 1, 6, 8, 11, 12, 13, 17, and 20; cognitive/academic behaviour, items 2, 5, 7, 9, and 18; social behaviour, items 3, and 14; and classroom organizational behaviour, items 4, 10, 15, 16, and 19.

Internal consistency was measured by computing an alpha coefficient for each sub-scale. The emotional behaviour alpha coefficient was .99. The cognitive/academic sub-scale alpha was .97. The social alpha coefficient was .94. The classroom organization sub-scale alpha was .98. These results indicated that the sub-scales were highly internally consistent.

Each item was carefully worded to differ only according to the behaviour measured, and the items were designed to reflect behaviours that would be observed in the school age child with ADHD, as set down by the DSM IV. Participants were requested to respond to the 20 questions by selecting the answer which best reflected their attitude with regard to each question. Five categories of choice were given for each question. These were: strongly disagree, disagree, neutral, agree, strongly agree.

A short introductory paragraph was included in the questionnaire to clarify terminology and to thank participants for their time and willingness to support the research with their valued contribution. A pilot study was completed using the

questionnaire with 30 people who were independent from the study and a Cronbach's alpha coefficient scale reliability rating of .99 was obtained for the overall scale.

### **Procedure**

After the participants in the four groups had agreed to participate in the study, the data were collected in a private interview setting with one researcher being used throughout the study. All parent participants were interviewed in their private homes, and teachers were interviewed in small withdrawal areas or staff rooms in the school setting. The participants were read the following opening instruction passage by the researcher.

“There are many children with major attention problems in schools. These children are often described as having a disorder that is called Attention Deficit Disorder or ADD. Some children may have ADD as well as hyperactivity, this is called Attention Deficit Hyperactivity Disorder or ADHD. Ritalin and Dexamphetamine are stimulant drugs that are often prescribed for children with medically diagnosed major attention problems (ADHD or ADD). It has been stated by some authorities, that stimulant drugs may help the child to focus on the important things in learning. Please select the answer which best reflects your attitude with regard to each question. Thank you.”

Participants were then asked to complete a practice page before completing the actual questionnaire. Care was taken to instruct participants to respond to each question individually, so careful consideration would be given to each item independently. The participants were administered the questionnaire, which took 10 to 15 minutes. Participants filled out the questionnaires in the presence of the researcher. The teacher group was given the questionnaire in a group situation where

possible, to save time during the data collection period. All parents were administered the questionnaire individually.

Participants were asked to tick the box which best reflected their attitude concerning the use of stimulant medication with regard to each question. The choices ranged from strongly disagree to strongly agree. Participants then completed the questionnaire and returned it to the researcher straight after completion. Participants were not permitted to collaborate with each other during completion of the questionnaire.

### **Scoring**

After the data were collected from each participant, a score was given for the five response alternatives for each question. The strongly disagree response was rated one, the disagree response was rated two, the neutral response was rated three, the agree response was rated four, and the strongly agree response was rated five. Scores for each of the twenty items were averaged, to render scores for all the items and for each sub-scale. Data were then analyzed by conducting one-way ANOVAs to see if there were differences among the groups on the total and on the sub-scales. Planned orthogonal contrasts were then conducted to see where the differences lay.

### **Ethical Considerations**

Prior to data collection and final selection of participants, the researcher held private interviews with each of the six school principals involved in the study. Explanation was given regarding the nature and purpose of the study and requests were made for cooperation in conducting the study.

Following these interviews, individual participants were selected. Participants were administered a letter (shown in Appendix B) which outlined the nature and purpose of the study and the benefits involved in participation, assuring privacy would

not be invaded, and that any information disclosed would remain confidential. The letter also outlined their right to withdraw from the study at any time.



## **CHAPTER FOUR**

### **Results**

In this chapter the results of the study have been detailed and the analyses of those results outlined. This chapter also identifies and outlines the differences in attitude observed between the groups included in the study. Graphs have been included to illustrate information regarding the statistical findings of the research.

### Statistical Results

In order to test the hypotheses, the four groups of participants were coded as outlined in the method section for ease of comparison: Group 1, PNM (parents of non-medicated children with ADHD); Group 2, PM (parents of medicated children with ADHD); Group 3, T (teachers); Group 4, PNA (parents of non-affected children). Data were then analyzed using an analysis of variance to determine whether there were differences between the groups in their attitudes toward the use of stimulant medication with primary school aged children who have ADHD. Figure 1, illustrates the effect found.

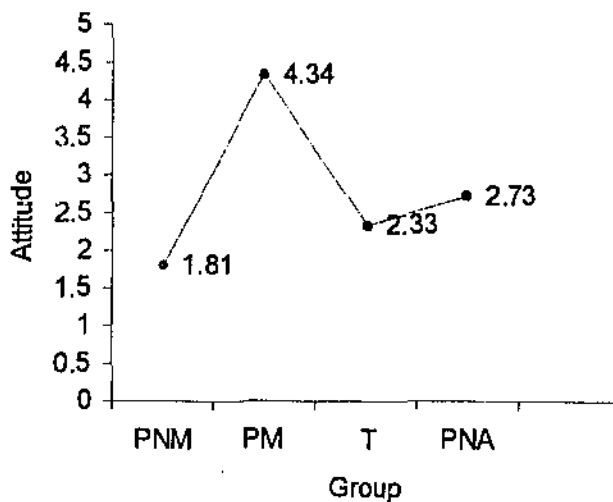


Figure 1. Total group mean scores for parent and teacher attitudes to the use of stimulant medication with children who have ADHD.

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As shown in Figure 1, a significant effect was found for total group mean scores,  $F(3, 116) = 101.14, p < .001$ .

Figure 1 illustrates that parents of medicated children were the most positive toward the use of stimulant medication with children who have ADHD. Parents of non-affected children were more positive than were teachers, and parents of non-medicated children were less positive toward stimulant use with these children.

Three planned orthogonal comparisons were conducted on the data corresponding to the three hypotheses. These compared: (a) parents with teachers, (b) parents of non-medicated children with parents of medicated children, and (c) parents of children with ADHD with parents of non-affected children.

The results for all three contrasts were significant. As a group, parents overall ( $M=2.96$ ) were more positive toward the use of stimulants for children with ADHD than were teachers ( $M=2.33$ ),  $t(116)=5.13, p < .001$ . Parents of medicated children ( $M=4.34$ ) felt that medication was of significantly more benefit to the ADHD child than did parents of non-medicated children with ADHD ( $M=1.81$ ),  $t(116)=16.78, p < .001$ . Indeed parents of non-medicated children held the least positive attitude toward the use of stimulants with these children. Parents of medically diagnosed children with ADHD ( $M=3.07$ ) felt that stimulant medication was of more benefit to the child with ADHD than did parents of non-affected children ( $M=2.73$ ),  $t(116)=2.65, p = .009$ .

### **The Sub-scales**

The data were grouped into sub-scales for further analysis in order to determine if differences in attitude existed between the participants with regard to different aspects of ADHD behaviour. These four aspects were: emotional/ behavioural, cognitive/academic, social, and classroom organizational behaviours.

One-way ANOVAs were then conducted to see if there were differences among the four groups on each of the sub-scales. As shown in Table 4, there were significant differences on all comparisons.

Table 4

*Comparisons among the groups on each sub-scale*

| Sub-scale              | Results                       |
|------------------------|-------------------------------|
| Emotional behaviour    | $F(3,116) = 90.38, p < .001$  |
| Cognitive/academic     | $F(3,116) = 86.28, p < .001$  |
| Social behaviour       | $F(3,116) = 88.11, p < .001$  |
| Classroom organization | $F(3,116) = 117.55, p < .001$ |

The results on the four sub-scales, Figures 2, 3, 4, and 5, show a strikingly similar pattern of results both to one another and to the overall scale of results in Figure 1.

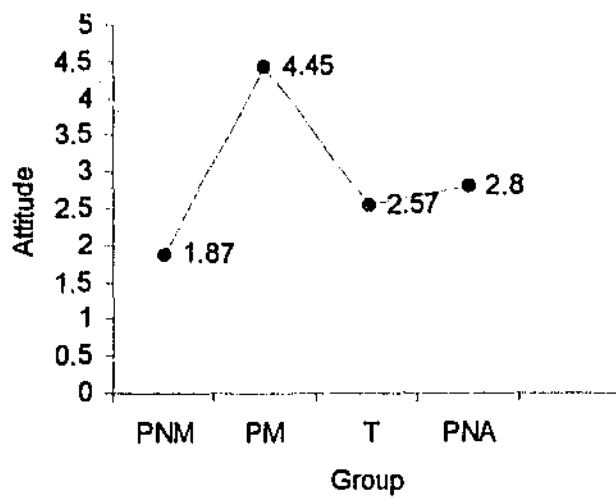


Figure 2. Emotional/Behavioural group mean scores for each group.

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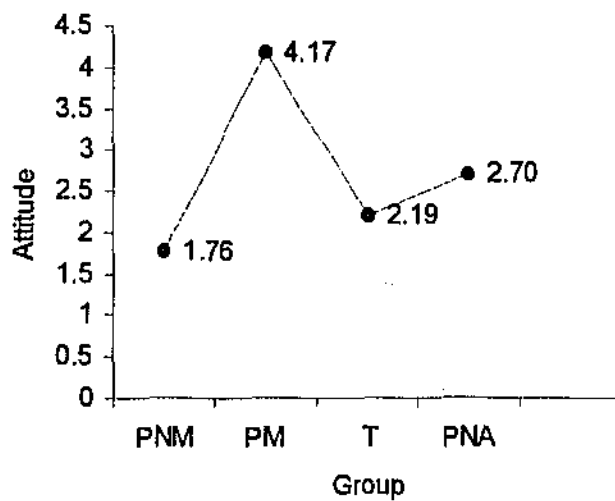


Figure 3. Cognitive/Academic group mean scores for each group.

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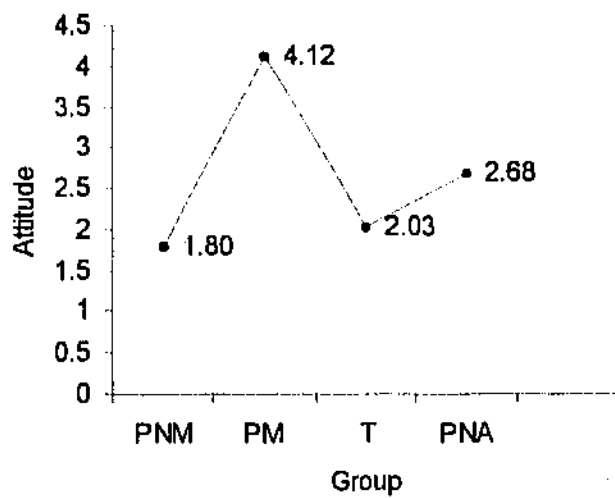


Figure 4. Social group mean scores for each group.

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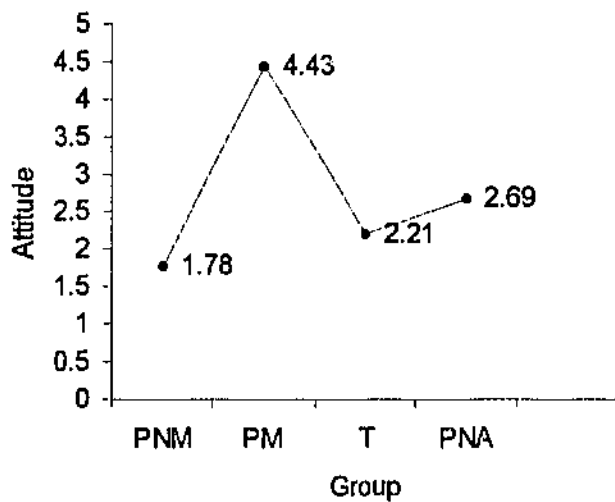


Figure 5. Classroom organization group mean scores for each group.

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Further planned orthogonal contrasts were conducted in order to determine between which groups the differences lay. Three contrasts were drawn for each of

the sub-scales shown in Figures 2, 3, 4 and 5. These contrasts were the same as for the total questionnaire, and are shown in Table 5.

Table 5

*Mean data by group for each sub-scale*

| Sub-scale              | T and P | PNM and PM | Affected and Non-affected |
|------------------------|---------|------------|---------------------------|
| Emotional/Behavioural  | 3.51**  | 15.89***   | 2.56*                     |
| Cognitive/Academic     | 5.23*** | 15.07***   | 2.07*                     |
| Social                 | 6.5***  | 14.76***   | 2.02*                     |
| Classroom organization | 6.14*** | 17.47***   | 3.12**                    |

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

All of the contrast test results showed that there was a significant difference between parents' and teachers' perceptions of whether medication affects the emotional/behavioural, cognitive/academic, social and classroom organizational aspects of children with ADHD. The results indicated that parents in general felt medication was more beneficial in the management of the child with ADHD in the classroom, than did teachers.

The results also showed that there was a significant difference between the attitudes of parents of non-medicated children and parents of medicated children with regard to the use of stimulants in the treatment of all aspects of ADHD. Parents of medicated children were more positive in their attitudes than were parents of non-medicated children with ADHD.

Finally, parents of non-affected children were significantly less positive in their attitudes toward the use of stimulant medication in the classroom management of the child with ADHD, than were parents of affected children.

### **Positive and negative items**

Individual items on the questionnaire were examined to see if there were particular items that evoked unusually positive or negative responses to the use of stimulant treatment. Several items were particularly noteworthy. Respondents were most likely to agree that medication was desirable when items pertained to the destruction of books and property (Item 17) ( $M=3.29$ ) or aggression and physical violence toward others (Item 20) ( $M=3.41$ ). Respondents were least likely to agree with the use of stimulant medication when items pertained to handwriting (Item 5) ( $M=2.62$ ), low self-esteem (Item 6) ( $M=2.63$ ), participating in group activities (Item 14) ( $M=2.59$ ), and getting along with other children (Item 3) ( $M=2.73$ ).

### **Summary**

It was found that parents were significantly more positive than teachers in their attitudes towards children with ADHD being given stimulant medication for the treatment of emotional/behavioural, cognitive/academic, social and classroom organizational aspects of ADHD. Parents of non-affected children were found to be significantly less positive in their attitude toward stimulant use, than were parents of affected children. Parents of medicated children with ADHD, were found to be significantly more positive in their attitude toward the pharmacological approach to management of the child with ADHD, than were parents of non-medicated children with ADHD. Discussion and explanation has been included in the following chapter, that further expands the results chapter and draws conclusions from the research.



## **CHAPTER FIVE**

### **Discussion and Implications**

This chapter interprets the results of the statistical analyses in terms of the purpose of this study, the original hypotheses, and with respect to other studies that have been conducted in the area of parent and teacher attitudes to the use of pharmacological intervention for the child with ADHD. Limitations and generalizability of the results have been addressed and implications for future research have been outlined. The study has been summarized and conclusions are drawn in the final section of this chapter.

### **General Discussion**

The purpose of this study was to record and compare the attitudes of parents and teachers to pharmacological management for the child with ADHD. Particular emphasis was placed on differences in attitudes toward the use of stimulants, for management of emotional/behavioural, cognitive/academic, social and classroom organizational behaviours of children with ADHD. It was hypothesized there would be a significant difference in attitude between the groups included in the study. The hypotheses were clearly supported by the findings. It is useful to observe the results of the study with respect to the theoretical framework on which the study was based.

Social psychologists agree that attitudes are learned through exposure, conditioning, and socialization, (Tesser, 1993). Specifically, attitudes can be acquired from others in the form of classical conditioning, instrumental conditioning, and modeling as well as by direct experience with the attitude object (Forsyth, 1995). If attitudes are learned through interactions with other people, media, books, various social groups and organizations, then this may account for some differences in attitude found between the groups of participants in the current study.

Observing and imitating other people subtly influences a person's attitude toward things. It may be the case that individuals within each group of participants

included in the study may be externally influenced by other peer attitudes within their own social group. The attitudes of teachers for example, may be influenced by the attitudes of other teachers. Similarly, the attitudes of parents' of medicated children with ADHD, might be influenced by other parents of medicated children. Parents of non-medicated children with ADHD may be attitudinally influenced by other parents who have chosen not to medicate their own child. Lastly, parents of non-affected children may be influenced by the attitudes, beliefs and actions of other members of their peer group with regard to using stimulants with children who have ADHD.

### **Parents and Teachers**

The first hypothesis in this research was:

There will be a difference between parents' and teachers' attitudes to the use of stimulant medication in the classroom management of children with ADHD, with regard to the child's emotional/behavioural, cognitive/academic, social, and classroom organizational behaviours.

This hypothesis was supported by the data for emotional/behavioural, cognitive/academic, social, and classroom/organizational aspects of ADHD. The results showed that teachers included in the study, held significantly less positive attitudes towards the use of stimulants than did parents.

The reasons for the differences in attitude in the current research were not known, however, some differences in attitudes might be formed consciously or unintentionally (Skinner, 1975). If friends, relatives, teachers, professionals, peers and significant other people have had positive or negative experiences with the use of stimulant medication with children who have ADHD, then they might have influenced the attitudes of the parents and teachers included in the study. This may account for the attitudinal differences between the parents and teachers in the current study.

because particular groups of individuals may be more positive toward the use of stimulants with children than others. These attitudinal differences may be acquired without intention, through social learning (Bandura, 1969).

Findings from previous overseas research, including studies by Epstein, Matson, Repp and Helsel (1986), Epstein, Singh, Luebke & Stout (1991), and Kasten, Coury, Heron (1992), concerning teacher attitudes to stimulants, may also reflect similar attitudes to those of Australian teachers. These previous reviews of teacher perceptions of stimulant medication, indicated that teachers felt educational intervention was the most favourable intervention and stimulant medication the least acceptable for the child with ADHD in the classroom.

Davino, Lehr, Leighton, Miskar and Chambliss (1995) in their extension of Kasten's study confirmed the findings of these previous studies, that a majority of teachers felt stimulant medication should only be used as a last resort, although, a significant number of teachers felt that stimulant medication improved academic performance. Power, Hess, and Bennett (1995) examined teacher acceptance of behavioural management and pharmacological interventions for the child with ADHD. The researchers found that the teachers surveyed preferred behaviour management, and were more favourable toward medication if they felt that a valid diagnosis had been made. Teachers who endorsed the use of stimulant medication were more likely to believe in genetic causal factors.

The findings of these previous studies regarding the less positive attitudes of teachers toward the use of stimulants with children who have ADHD, might account for the attitudes of the teachers in the current study. The reasons for the differences in attitude were not determined by this study, therefore, comparisons regarding teacher preferences for treatment intervention cannot be drawn.

A factor worthy of consideration from previous research, is that many teachers surveyed in these studies indicated they were unsure of the beneficial effects of stimulant medication on the behavioural aspects of children with ADHD. Jerome (1994) observed that some common myths were still prevalent among the teachers surveyed in his research. Many teachers still believed the condition of ADHD could be effectively managed by special diets, that medication was no longer effective after puberty, and that most children outgrew the disorder in adolescence. This knowledge deficit, may play a significant role in the formation of less positive teacher attitudes toward stimulants and their use with children who have ADHD, as were reflected in the current study.

Some teachers felt that too many children were on medication (Jerome, 1994). This opinion may have some significance when teacher attitudes toward stimulant use with children are observed, because many teachers may have had negative experiences with the diagnostic processes of ADHD, or the use of stimulant drugs in the treatment of students who have ADHD. These concerns may also be evident among the teachers who were surveyed in the current study and may account for the less positive attitudes of the teachers who participated. Western Australian teachers may have concerns regarding the diagnostic processes of ADHD, and the rapid increases in the numbers of children being prescribed stimulant medication.

All of the above mentioned overseas studies noted that a significant number of teachers said they needed additional training. Both pre-service and in-service levels of training were considered inadequate by the majority of the teachers surveyed. Many teachers may have little knowledge about the beneficial and undesired effects of stimulants. Despite this lack of adequate technical information, teachers surveyed frequently offered advice to parents about seeking stimulants. The ability of teachers

to provide accurate information to the physician or parent may be questionable.

These same underlying factors may have contributed to the less positive attitudes of the teachers surveyed in the current research.

It should be noted that the three groups of parents included in the study differed significantly from one another, as will be discussed later in this chapter. It was the high mean for the parents of medicated children with ADHD, which made the difference between the parents and teachers in this first comparison of attitudes.

Malyn, Jenson and Clark (1993) found that even though the teachers, school psychologists and special educators in their study believed stimulants to be beneficial in the treatment of ADHD, that they were much less likely to present this treatment alternative to parents. However, parental attitudes or decisions to accept medication for their children and attitudes toward the use of medication, would also be affected by discussions with the paediatrician. Even if their attitudes were initially negative, as may be observed in the non-medicated and non-affected parent groups in the present study, evidence presented to the parent by the paediatrician may change their attitude. Observations of the changes in their child, before and after the onset of medication may also affect attitudes in the parent group. Teachers, on the other hand, may have neither of these experiences, or they may not experience these changes in the child's behaviour to the same extent as a parent.

Previous global research studies that reviewed parental perspectives were conducted by Kottman, Robert, and Baker (1995). Medication emerged as the most frequently used intervention and as the most effective treatment according to the parents surveyed. Parents of children with ADHD in their survey, indicated the major areas of concern were for their child's academic ability, self-esteem, future adjustment

and lack of social skills. These same attitudes and concerns may exist in the sample surveyed in the current research.

### **Parents of Medicated & Non-medicated Children with ADHD**

The second hypothesis was:

There will be a difference between the attitudes of parents of medicated children with ADHD, and the attitudes of parents of non-medicated children with ADHD, to the use of stimulant medication in the classroom management of these children, with regard to the child's emotional/behavioural, cognitive/academic, social, and classroom organizational behaviours.

This hypothesis was also supported by the results. Parents of medicated children with ADHD were more positive in attitude toward the use of stimulant medication with children who have ADHD than were parents of non-medicated children. Parents of children with ADHD who were currently medicated, felt that stimulants were considerably more beneficial in the treatment of the child with ADHD and emotional/behavioural, cognitive/academic, social, and classroom organisational problems, than did parents of currently non-medicated children with ADHD.

Consideration should be given to the underlying reasons why a parent chooses not to medicate a child. One factor may be that they are opposed to the use of medication for children with ADHD in principle, so they choose not to medicate their child. If parents are opposed to the use of medication in principle, then they would have negative attitudes toward medication as a result. This may indicate that they have not been exposed to the advantages or disadvantages of medication. These parents therefore, would not previously have had the opportunity to witness the change in their child's behaviour when medication is administered, and may have formed their attitudes as a result of their beliefs rather than their experiences.

It is useful to consider previous research investigations conducted in the area of parental perspectives regarding the pharmacological treatment of children with ADHD. Kazdin (1980) examined parental attitudes to the appropriateness of treatment for children with ADHD. Results of this study, indicated that attitudes held by parents, regarding the appropriateness of treatment, might influence their willingness to accept the treatment initially, and might ultimately influence the integrity with which that treatment is dispensed.

Cross-Calvert & Johnson (1990) and Liu, Robin, Brenner, Eastman (1991) surveyed mothers of diagnosed children with ADHD, regarding medication acceptability. The results of these studies indicated that in spite of numerous reports of medication efficacy, both groups of parents rated behaviour management as the most acceptable form of treatment and pharmacological as the least favourable. These previous studies may indicate that parents may be opposed to the use of stimulant medication in principle and therefore form less positive attitudes as a result.

The studies also noted that a mother's knowledge about the effects of stimulants was related to greater acceptability of the medication. Mothers' decisions to try medication for their children were made more positive when decision-making conferences facilitated treatment acceptability. For example, mothers were more positive about trying medication for their children if they were given more knowledge regarding the disorder and the various forms of management available. If mothers were encouraged to express feelings of guilt about the disorder, and consider all alternatives, and eventually rank order all treatment options, then attitudes towards stimulants were made more positive.

Parents of medicated children in the current study may have been given more knowledge regarding the disorder and the various treatments available to them.



They may also have had more counseling and support during the diagnostic stage of intervention for their child and therefore have formed more positive attitudes toward pharmacological management as a result of an increase in knowledge and support.

Findings by Brown, Dingle and Landau (1994) and Kottman, Robert and Baker (1995), that mothers' knowledge of the disorder is related to greater acceptability, may identify underlying factors that may account for the more positive attitudes of parents of medicated children included in the current study. If parents are given knowledge and experience with the use of stimulant medication for the treatment of ADHD in children, then their attitudes toward the use of stimulants may be enhanced. Parents of medicated children in the current study felt that medication was useful in the treatment of all four behavioural areas.

Positive parental attitudes might be attributed to greater knowledge regarding the efficacy and side effects of stimulants. Medication issues such as initial dosage regulation and adjustment to side effects may be more easily understood and persisted with, if a parent has more knowledge and/or support at the onset of medication.

The less positive attitudes of parents of non-medicated children included in the current study might be attributed to the fact that these parents were not given support and counseling during the diagnosis stage of intervention for their child. However, it is also possible that this group of parents found alternative forms of intervention to be of value in the management of their child.

Attitudes can also be acquired from exposure to an object or by direct experience. If that experience or exposure is repeated over time, it may result in a preference for that object, when compared to objects less encountered (Bornstein, 1989). If stimulant medication has been associated with bad experiences or good experiences, then a person's attitude toward stimulant medication may be formed

accordingly (Baron & Burn, 1994). This may account for the differences in attitudes between the two groups of parents in the current study. Perhaps the attitudes of parents of non-medicated children are a result of bad experiences with the use of stimulants for the management of ADHD in their child. Accordingly, the more positive attitudes in parents of medicated children with ADHD, may be a result of good experiences with the use of stimulants for their child.

A further reason why parents might not choose medication for their child, may be that their child is one of the small percentage for whom pharmacological management is not effective. Side effects of stimulants may have been intolerable for either the child or the family. Negative attitudes toward the use of stimulant medication may be formed as a result of these negative experiences.

If some parents of non-medicated children with ADHD formed negative attitudes toward stimulants as a result of bad experiences with medication, then other factors of non-compliance could also have contributed to less positive attitudes within this parent group. Stine (1994) cited factors affecting medication non-compliance. Findings indicated that unfulfilled expectations of an instant cure could lead to disappointment and non-compliance if no support was giving during the initial diagnostic stage of management. The less positive attitudes of parents of non-medicated children with ADHD in this current study might support the findings by Stine (1994). Underlying issues of concern regarding the use of stimulants may play a significant role in the formation of less positive attitudes in the parents of the non-medicated group. Issues such as the severity of side-effects in some children, and drug addiction may raise concerns among this group of participants. It was not known if these parents had previously tried medication with their child.

### **Parents of Affected and Non-affected children**

The third hypothesis was:

There will be a difference between the attitudes of parents of non-affected children and the attitudes of parents of affected children, to the use of stimulant medication in the classroom management of children with ADHD, with regard to the child's emotional/behavioural, cognitive/academic, social, and classroom organizational behaviours.

This hypothesis was also supported by the results. Parents of children with ADHD overall held more positive attitudes toward the use of stimulants, than did parents of non-affected children. Parents of children with ADHD felt that medication was more beneficial in the treatment of emotional/behavioural, cognitive/academic, social and classroom organizational problems associated with ADHD than did parents of non-affected children. This was because of the very high mean of the parents of medicated children with ADHD. The mean of the parent group who had non-medicated children with ADHD was much lower.

Previous research in the area of societal attitudes toward stimulant use with children who have ADHD may illuminate possible underlying reasons for these differences. Summer and Kaplan (1987) reviewed societal attitudes toward the use of stimulants, with children. Results indicated that societal attitudes about the propriety of certain medical interventions might influence parental decisions to medicate. Results also indicated that non-affected parents felt that medication was more justified for the epileptic child, whose disorder they considered of organic etiology, as opposed to the use of stimulants for the child who has ADHD, a condition for which etiology has yet to be established. Results identified a general lack of understanding of society with regard to the use of stimulants with children who have ADHD.

Parents of non-affected children are likely to be influenced by general societal attitudes and media misrepresentations of ADHD. Summer and Kaplan (1987) identified underlying reasons for less positive attitudes of non-affected parents towards the use of stimulant medication with children who have ADHD, such as their acceptance of medication for organic based disorders for which etiology was known. The disorder ADHD, with currently no known etiology, was less likely to be accepted by society as a disorder requiring medical intervention. The less positive attitudes of the parents of non-affected children included in this current study may be explained by previous research concerning the general public lack of knowledge regarding the use of stimulants to treat children with ADHD.

Parents of affected children, on the other hand, fall into two groups, the medicated and the non-medicated. Clearly, it was the very positive attitudes of those parents of children who were on medication that made the difference between the affected and non-affected groups of participants in the current study. As mentioned earlier, the attitudes of medicated parents would be influenced by information, support from the paediatrician, and experiences with their own child's behaviour. These factors because of their immediacy and salience, would over-ride the general societal and media attitudes, previously held by the parent.

Definite conclusions cannot be drawn as to the reasons for the less positive attitudes of parents of non-affected children in this current study. Media misrepresentation could play a role in the formation of these less positive attitudes. Consideration must also be given to public concerns about pharmacological treatments for ADHD. It may well be the case that parents of non-medicated and non-affected children hold significantly less positive attitudes toward the use of stimulants with children who have ADHD as a result of these concerns.

### **Positive and Negative Items**

The previous overseas studies by Epstein, Matson, Repp and Helsel (1986), Epstein, Singh, Luebke & Stout (1991), and Kasten, Coury, Heron (1992), concerning teacher attitudes to stimulants, may also reflect similar attitudes to those of Australian teachers. These previous studies found that teachers ranked hyperactivity, acting out, anxiety and aggression as the behaviours most likely to lead to stimulant therapy. Social withdrawal, depression and sadness were ranked as the behaviours least likely to lead to drug therapy. These findings from this previous research are consistent with the results of this current study.

Particular items on the questionnaire for the current research evoked unusually positive or negative responses in attitude to the use of stimulant treatment. The most positive responses were obtained on items pertaining to the destruction of books or property and aggression or physical violence toward others. The most negative responses to the use of stimulants, were obtained on items about handwriting, low self-esteem, participating in group activities and getting along with other children.

This finding is intriguing, however caution must be taken in drawing conclusions regarding the reasons behind this observation. It is possible these results might indicate that parent and teacher acceptance of stimulant use becomes more positive for the child with ADHD and Conduct Disorder, rather than the child with ADHD and Learning Disabilities or ADHD specifically. An explanation for this finding may be that people are generally more tolerant toward the use of stimulant medication with problems that might be regarded as more serious and meriting more extreme forms of intervention. This might be particularly evident with the child who has ADHD and emotional/behaviour problems, when those problems affect the well being of other children in the class, such as in cases of physical violence or aggression. It may also

be possible that people are more tolerant toward the use of stimulants when the material property of others or school property is at risk of being damaged by the child with ADHD.

People may consider that stimulants might not be the most appropriate form of intervention for children who suffer with social and cognitive problems associated with ADHD. The low ratings for behaviours such as poor handwriting and low self-esteem, in the current study, may reflect these attitudes. These behavioural symptoms of ADHD may not be regarded as very serious problems in the classroom.

### **Limitations and Implications for Future Research**

Results of this study are limited to the Port Hedland district and cannot be generalised to the entire state. The Port Hedland district is an isolated area located in the Pilbara region of Western Australia. Support services for students with disabilities are limited compared to those available in other regions of Western Australia. The town is very isolated in regard to educational services, which may have a bearing on the knowledge of teachers with regard to current treatments and methods of invention with children with ADHD.

Furthermore, the teaching staff within the region is extremely transient with high staff turnover, and exceptionally high percentages of new graduate teachers. It is worthy of note, that due to the transient nature of teachers in the north-west regions of Western Australia, the results of the current study may not be as isolated as would be expected. Teachers who were surveyed in the current study may have already relocated to other country or city regions within the state.

The high percentage of new graduate teachers in the region, is particularly relevant to teachers knowledge and experience with children who have ADHD. More experienced teachers may have more positive attitudes toward the pharmacological

management of children with ADHD. Teachers' previous experience with students who have ADHD, and years of teaching experience were not known in the current study.

It is important to note, that since it was impossible to randomly assign parents of children with ADHD to the medicated/non-medicated conditions, other variables aside from the participants willingness to accept medication may be important in explaining differences in attitudes. One such variable may be the degree to which a child is affected by the ADHD condition. Parents of children who are more seriously affected by ADHD may be more accepting of the use of stimulant medication in the management of their child, than parents of children who are less affected by the condition.

Further research needs to be conducted with regard to parent and teacher attitudes toward pharmacological management of children with ADHD in city locations or metropolitan regions as compared to country Western Australia. The current research highlights the necessity for future research to determine underlying reasons for attitudes observed in this current study. The results of this investigation indicate that teacher's attitudes were less positive than those of parents surveyed, with regard to the use of stimulants with children with ADHD.

If, as previous global studies suggests, future Australian research investigations establish that teachers in Australian schools are more favourable toward behavioural interventions than medical management, then the issues of teacher influence on parental decisions to medicate and the teacher's responsibility for monitoring the effects of medication should be investigated. Further research needs to be conducted regarding the role the Australian classroom teacher plays in the management of the child with ADHD.

The results of the current research also indicate a definite need for future research to determine influences that affect parental choices in taking a pharmacological approach to management of the child with ADHD. It may be that parents who choose not to medicate their child lack knowledge concerning the benefits of stimulant therapy, or that they were mis-informed or ill-advised by professional personnel. Media misrepresentation may also play a significant role in the formation of parental attitudes, teacher attitudes and societal attitudes toward stimulant medication. If this is the case, then the role of the physician and school psychologist with respect to the provision of professional advice, support and counsel to parents of children with ADHD, should be investigated.

Australian physicians may have a professional responsibility to inform parents about these issues, thus enabling the parent to make an educated decision regarding their choice to medicate. Parental decisions not to medicate their child may stem from a lack of follow-up or support from professionals involved in the management of their child. If future research determines that these underlying factors are significant in the formation of less positive parental attitudes, then the roles of the physician, school psychologist and teacher with respect to professional responsibility to inform parents regarding management issues, need to be reviewed.

### **Implications for Practice**

The results of this research have highlighted the less positive attitudes of teachers, toward the use of stimulant medication for the child who has ADHD. This current research may be partly explained by the findings of Singh, Luebke and Stout (1991); Kasten, Coury and Heron (1992); and Davino, Lehr, Leighton, Mistar and Chambliss (1995). These studies indicated that teachers were not adequately trained



in their knowledge and understanding regarding ADHD and the management of the disorder.

The results of the current study may indicate that serious deficiencies also still exist in Western Australian teacher pre-service and in-service training programmes. This has implications for teacher training with respect to the preparedness of Australian teachers with regard to the role of the classroom teacher in the management of the child who has ADHD. This is a pertinent consideration if, as with other countries, Australian teachers are becoming more involved in the referral process and ongoing monitoring of medication effects. In particular the less positive attitudes of teachers is of concern, especially if teachers are considered to be a valuable link in the education process for the child with ADHD, and teacher evaluation is considered vital throughout the medication process (Reed, Vas, Maag and Wright 1994).

Implications for issues such as medication compliance should also be considered, especially when children must take medication at school. The results of the current study have clear implications for professionals involved in the development of effective intervention programmes for children with ADHD. Research studies by Elia, Welsh, Gullotta and Rapaport (1993); and Cherkes-Julkowske, Stolzenberg, Hatzes and Madaus (1995) clearly indicate the social, emotional/behavioural, cognitive/academic, and classroom organizational benefits of psychostimulant medication for the child with ADHD.

This current study may indicate that some Australian teachers might feel that stimulants should not be used in the treatment of cognitive/academic problems with children who have ADHD. This is of concern considering the research generated evidence that supports the efficacy of stimulants in the treatment of reading

comprehension, math and cognition problems. Previous studies have shown that the child with ADHD who shows significant improvement in the cognitive/academic areas, may in turn, show an increase in their levels of self-esteem and sense of well being. Therefore, the gains seen in cognitive/academic areas may also flow over to emotional/behavioural, social, and classroom/organizational behaviours of the child with ADHD.

The issue of reliability of diagnosis for ADHD, may also be of concern to both parents and teachers in Australia, and may play a significant role in the formation of less positive attitudes toward the use of stimulants with young children who have ADHD (Jacobvitz 1990). Future research may highlight the need for future introduction of more stringent, reliable and uniform diagnostic procedures for the disorder known as ADHD, the introduction of which, may serve to allay concerns within society in general.

### **Conclusion**

This study compared the attitudes of parents and teachers to the pharmacological approach to intervention for the child with ADHD in the classroom. The focus of the study was on differences in attitude toward the use of stimulants, for the management of emotional/behavioural, cognitive/academic, social and classroom organizational behaviours of children with ADHD.

Findings indicated that there were significant differences in the attitudes of the groups included in the study. Teachers in this study held a significantly less positive attitude toward the pharmacological management of children with ADHD than did parents. Parents of medicated children with ADHD were significantly more positive in their attitudes toward stimulant use, than were parents of non-medicated children with ADHD. Finally, parents of medically diagnosed children with ADHD, held

significantly more positive attitudes overall, toward the use of stimulant medication than parents of non-affected children.

The reasons for these differences may be related to a person's current knowledge and experiences with the use of stimulants in the management of the child with ADHD in the classroom. Parents of medicated children in the current study, may have been given more knowledge, support and counseling, regarding the nature of the disorder, during the diagnostic stage of intervention for their child. Whereas, parents of non-medicated children may not have been given these same levels of support. Also, the groups of participants included in the study may have differed according to their exposure to the advantages and disadvantages of medication and its use in the treatment of ADHD. The groups may also have differed in their attitudes towards pharmacological intervention for children with ADHD as a matter of principle.

Clearly, further research investigations need to be conducted with the intent of enlightening the underlying reasons for the attitudes held by both parents and teachers toward the pharmacological management of the child with ADHD. Concerns need to be raised regarding the attitudes and knowledge of teachers toward ADHD and especially pharmacological management of the disorder.

The problems that many children with ADHD exhibit in terms of their social, emotional, cognitive and organizational behaviour, cause extraordinary individual suffering. The effects of these problems are not restricted to the children themselves because the outcomes of the disorder impact significantly on the children's families, schools and peers as well. These problems underscore the need for further research-generated evidence on which to base services and intervention for these exceptional children.

## REFERENCES

- Alto, J. L., & Frankenberger, W. (1995). Effects of methylphenidate on academic achievement from first to second grade. *International Journal of Disability-Development and Education, 42* (3), 259-273.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders*, 4<sup>th</sup> edition (DSM-IV). Washington, DC: American Psychiatric Association.
- Anderson, J. C., Williams, S., McGee, R., & Silva, P. A. (1987). DSM-III: Disorders in preadolescent children; Prevalence in large sample from the general population. *Archives of General Psychiatry, 44*, 69-76.
- Askew, B. L. (1993). Practices of special education teachers for dealing with students with ADD/ADHD. *Masters Thesis, Saint Xavier University*, 101-107.
- Ayllon, T., Layman, D., & Kandel, H. J. (1975). A behavioral-educational alternative to drug control of hyperactive children. *Journal of Applied Behavior Analysis, 8*, 137-146.
- Barkley, R. A. (1989). Attention deficit disorder with hyperactivity. In Mash, E. J., & Terdal, L. G. (Eds.), *Behavioural assessment of childhood disorders*, (2<sup>nd</sup> ed.). New York: Guildford Press. 62-104.
- Barkley, R. A., (1990). *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment*. New York: Guildford Press.
- Barkley, R. A., DuPaul, G., & McMurray, P. O. (1990). Comprehensive evaluation of attention deficit disorder with and without hyperactivity as defined by research criteria. *Journal Of Consulting and Clinical Psychology, 58*, 775-789.
- Barkley, R. A., McMurray, M. B., & Edelbrock, C. S. (1990). Side effects of methylphenidate in children with attention deficit hyperactivity Disorder: a systemic, placebo-controlled evaluation. *Pediatrics, 86*,

184-192.

Barkley, R. A. (1991). *ADD a clinical workbook*. New York: Guildford Press.

Barkley, R. A. (1995). *Manual to accompany the parents's workshop on attention deficit disorder in children*. Massachusetts: Unpublished.

Brown, R. T., Dingle, A., & Landau, S. (1994). Overview of psychopharmacology in children and adolescents. *School Psychology Quarterly*, 9 (1), 4-25.

Burcham, B., Carlson, L., & Milich, R. (1993). Promising school-based practices for students with attention deficit disorder. *Exceptional Children*, 60 (2), 174-180.

Cherkes-Julkowski, M., Stolzenberg, J., Hatzes, N., & Madaus. (1995).

Methodological issues in assessing the relationship among ADD, medication effects and reading performance. *Journal of Learning Disabilities*, 6 (2), 21-30.

Cohen, S. (1977). Improving attitudes toward the handicapped. *Educational Forum*, 42, 9-20.

Comings, D. E. (1997). Genetic aspects of childhood behavioral disorders.

*Child Psychiatry and Human Development*, 27 (3), 139-50.

Conners, C. K. (1969). A teacher rating scale for use in drug studies with children.

*American Journal of Comparative and Physiological Psychology*, 126, 884-888.

Conners, C. K. (1973). Rating scales for use in drug studies with children (Special

Issue). *Psychopharmacology Bulletin*, 9, 24-84.

Copeland, A. P., & Wisniewske, N. M. (1981). Learning disability and

hyperactivity: deficits in selective attention. *Journal of Experimental Child Psychology*, 32, 88-101.

- Cornett-Ruiz, S., & Hendricks, B. (1993). Effects of labeling and ADHD behaviours on peer and teacher judgements. *Educational Research, 86* (6), 349-355.
- Cross-Calvert, S., & Johnston, C. (1990). Acceptability of treatments for child behavior problems: Issues and implications for future research. *Journal of Clinical Child Psychology, 19*, 61-67.
- Davino, D., Lehr, A., Leighton, M., Miskar, K., & Chambliss, C. A. (1995). Relationship between teachers' anti-stimulant attitudes and their experience with ADHD students. *AJIM*, Maryland, New Jersey.
- Douglas, V. I., & Parry, P. A. (1983). Effects of reward on delayed reaction time task performance of hyperactive children. *Journal of Abnormal Child Psychology, 11*, 313-326.
- Douglas, V. I., & Parry, P. A. (1994). Effects of reward and non-reward on frustration and attention in attention deficit disorder. *Journal of Abnormal Child Psychology, 22*, 281-302.
- DuPaul, G. J., Guevremont, D. C., & Barkley, R. A. (1991). Attention deficit hyperactivity disorder. In T. R. Kratochwill & R. J. Morris (Eds.). *The practice of child therapy*. (2<sup>nd</sup> ed.). New York: Pergamon. 12-37.
- DuPaul, G. J., Stoner, G., Tilly, W. D., & Putnam, D. (1991). In Stoner, G. et al. *Interventions for achievement and behaviour problems*. NASP, Md. 126-137.
- Elia, J., Welsh, P. A., Gullotta, C. S., & Rapoport, J. L. (1993). Classroom academic performance: Improvement with both methylphenidate and dextroamphetamine in ADHD boys. *Journal of Child Psychology and Psychiatry, 34* (5), 785-804.
- Elliott, S. N. (1988). Acceptability of behavioral treatments in educational settings. In J. C. Witt, S. N. Elliott, & F. M. Gresham (eds.).

*Handbook of behavior therapy in education*. New York: Plenum. 22-98.

Epstein, M. H., Matson, J. L., Repp, A., & Helse, W. J. (1986). Acceptability of treatment alternatives as a function of teacher status and student level. *School Psychology Review, 15*, 84-90.

Epstein, M. H., Shaywitz, S. E., Shaywitz, B. A., & Woolston, J. L. (1991). The boundaries of attention deficit disorder. *Journal of Learning Disabilities, 24*, 163-168.

Epstein, M. H., Singh, N. N., Luebke, J., & Stout, C. E. (1991). Psychopharmacological intervention. II: Teacher perceptions of psychotropic medication for students with learning disabilities. *Journal of Learning Disabilities, 24* (8), 477-483.

Felton, R. H., Wood, F. B., Brown, I. S., & Campbell, S. K. (1987). Separate verbal memory and naming deficits in attention deficit disorder and reading disability. *Brain and Language, 31*, 171-184.

Fiore, T. A., Becker, E. A., & Nero, R. C. (1993). Educational interventions for students with attentional deficit disorder. *Exceptional Children, 60* (2), 163-173.

Foley, J. M. (1979). Effect of labeling and teacher behaviour on children's attitudes. *American Journal of Mental Deficiency, 83*, 380-384.

Forness, S. R., Youpa, D., Hanna, G. L., Cantwell, D. P., & Swanson, J. M. (1992). Classroom instructional characteristics in attention deficit hyperactivity disorder: Comparison of pure and mixed subgroups. *Behavioral Disorders, 17*, 115-125.



Fowler, M. (1992). *CHADD Educators Manual*. Plantation, Florida: C.H.A.D.D.; Children with attention deficit disorders, American academy of child and adolescent psychiatry.

Gittleman-Klein, R., Klein, D. F., Abikoff, H., Katz, S., Gloisten, A. C., & Kates, W. (1976). Relative efficacy of methylphenidate and behavior modification in hyperkinetic children: An interim report. *Journal of Abnormal Child Psychology*, 4, 361-379.

Goodman, R., & Stevenson, J. (1989). A twin study of hyperactivity: II. The etiological roles of genes, family relationships, and perinatal adversity. *Journal of Child Psychology and Psychiatry*, 30, 691-709.

Gordon, M. (1991). *ADHD/hyperactivity: A consumer's guide for parents and teachers*. DeWitt, New York: GSI publications.

Goyette, C. H., Conners, C. K., & Ulrich, R. F. (1978). Normative data on revised Conners parent teacher rating scales. *Journal of Abnormal Child Psychology*, 6, 221-236.

Green C., & Chee, K. (1994). *Understanding ADD*. Sydney, Australia: Transworld.

Henker, B., & Whalen, C. K. (1989). Hyperactivity and attention deficits. *American Psychologist*, 44, 215-223.

Holborow, P. L., & Berry, P. S. (1986). Hyperactivity and learning difficulties. *Journal of Learning Disabilities*, 19, 426-431.

Hoza, B., Pelham, W. E., Sams, S. E., & Carlson, C. (1992). An examination of the "dosage" effects of both behavior therapy and methylphenidate on the classroom performance of two children with ADHD. *Behavior Modification*, 16, 164-192.

- Jacobvitz, D. (1990). Treatment of attentional and hyperactivity problems in children with sympathomimetic drugs: A comprehensive review. *Journal of The American Academy of Child and Adolescent Psychiatry, 29*, 677-688.
- Jerome, L., Gordon, M., & Hustler, P. (1994). A comparison of American and Canadian teachers' knowledge and attitudes towards attention deficit hyperactivity disorder (ADHD). *Canadian Journal of Psychiatry, 39*, 563-567.
- Jerome, L. (1995). Teacher and parent influences on medication compliance. *Journal of Child and Adolescent Psychopharmacology, 5* (1), 85-86.
- Kahneman, P. (1973). *Attention and effort*. Englewood Cliffs, New Jersey: Prentice-Hall.
- Kasten, E. F., Coury, D. L., & Heron, T. E. (1992). Educators' knowledge and attitudes regarding stimulants in the treatment of attention deficit hyperactivity disorder. *Journal of Developmental and Behavioral Pediatrics, 13* (3), 215-219.
- Kazdin, A. E. (1980). Acceptability of alternative treatment for deviant behavior. *Journal of Applied Behavior Analysis, 13*, 259-273.
- Kazdin, A. E. (1981). Acceptability of child treatment techniques: The influence of treatment efficacy and adverse side effects. *Behavior Therapy, 12*, 493-506.
- Kazdin, A. E. (1985). *Treatment of antisocial behaviour in children and adolescents*. Homewood, IL: Dorsey.
- Kottman, T., Robert, R., & Baker, D. (1995). Parental perspectives on attention-deficit/hyperactivity disorder: How school counselors can help. *The School Counselor, 43*, 142-149.

- Landau, S., & Moore, L. A. (1991). Social skills deficits in children with attention deficit hyperactivity disorder. *School Psychology Review, 20* (2), 235-251.
- Lahey, B. B., & Carlson, (1991). Validity of the diagnostic category of attention deficit disorder without hyperactivity: A review of the literature. *Journal of Learning Disabilities, 24* (2), 176-181.
- Lerner, J. W., & Lerner, S. R. (1991). Attention deficit disorder: Issues and questions. *Focus on Exceptional Children, 24* (3), 1-17.
- Liu, C., Robin, A. L., Brenner, S., & Eastman, J. (1991). Social acceptability of methylphenidate and behavior modification for treating attention deficit hyperactivity disorder. *Journal of Pediatrics, 88*, 560-565.
- Lowenthal, B. (1993). The use of medications for children with attention deficit disorders. *Journal of Special Education, 17* (2), 134-140.
- Malyn, D., Jensen, W. R., & Clark, E. (1993). *Myths and realities about ADHD: A comprehensive survey of school psychologists and teachers about causes and treatments*. Paper presented at the National Association of School Psychologists annual convention. Washington, D. C.
- McBurnett, K., Lahey, B. B., & Pfiffner, L. J. (1993). Diagnosis of attention deficit disorders in DSM-IV: Scientific basis and implications for education. *Exceptional Children, 60*, 114.
- Mercer, C. D. (1992). *Students with learning disabilities*. (4<sup>th</sup> ed.). New York: Merrill.
- National Health and Medical Research Council. (1990). *Learning difficulties in children and adolescents*. Canberra, Australia: Australian Government Publishing Service.

- Nigg, J. T., Swanson, J., & Hinshaw, S. P. (1993). *Posner individual orienting tasks with ADHD children*. Paper presented at S.R.C.A.P.
- Parker, H. C. (1992). *ADD fact sheet*. Paper prepared for the fourth annual conference, October 15-17, Chicago: Illinois.
- Parker, H. C., & Storm, G. (1994). *Medical management of children with attention deficit disorder*. Plantation, Florida: C.H.A.D.D; Children with Attention Deficit Disorders, American Academy of Child and Adolescent Psychiatry.
- Peldham, W. E., & Bender, M. E. (1982). Peer relationships in hyperactive children: Description and treatment. In K. D. Gadow. (Ed.), *Advances in learning and behavior disabilities*. 365-436.
- Pelham, W. E., Carlson, C., Sams, S. E., Vallano, G., Dixon, M. J., & Hoza, B. (1993). Separate and combined effects of methylphenidate and behavior modification on boys with attention deficit-hyperactivity disorder in the classroom. *Journal of Consulting and Clinical Psychology, 16* (3), 506-515.
- Pfiffner, L. J., & Barkley, R. A. (1990). Educational placement of classroom management. In R. A. Barkley (Ed.), *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment*. New York: Guilford Press. 59-67.
- Power, T. J., Hess, L. E., & Bennett, D. S. (1995). The acceptability of interventions for attention-deficit hyperactivity disorder among elementary and middle school teachers. *Journal of Developmental and Behavioral Pediatrics, 16* (4), 238-243.
- Rappport, M. D., Murphy, A., & Bailey, J. S. (1980). The effects of a response-cost treatment tactic on hyperactive children. *Journal of School Psychology, 18*, 98-111.

- Rapport, M. D., Murphy, H. A., & Bailey, J. S. (1982). Ritalin vs response-cost in the control of hyperactive children: A within subject comparison. *Journal of Applied Behavior Analysis, 15*, 205-216.
- Reber, A. S. (1995). *The penguin dictionary of psychology*, (2<sup>nd</sup> ed.). Ringwood, Australia: Penguin.
- Reid, R., Vasa, S. F., Maag, J. W., & Wright, G. (1994). An analysis of teacher's perceptions of attention deficit-hyperactivity disorder. *The Journal of Research Development in Education, 2* (3), 195-202.
- Roberts, M. C. (1986). *Psychological interventions and strategies for pediatric problems*. New York: Pergamon.
- Rostain, A. L., (1991). Attention deficit disorders in children and adolescents. *Paediatric Clinics of North America, 38*, 607-635.
- Rutter, M. (1993). Behavioral studies: Questions and findings on the concept of a distinctive syndrome. In M. Rutter (Ed.), *Developmental neuropsychiatry*, New York: Guilford. 259-279.
- Safer, D., & Krager, J. M. (1989). Hyperactivity and inattentiveness: School assessment of stimulant treatment. *Clinical Pediatrics, 28*, 216-221.
- Satterfield, J. H., Satterfield, B. T., & Cantwell, D. P. (1980). Multimodality treatment: A two year evaluation of 61 hyperactive boys. *Archives of General Psychiatry, 37*, 915-919.
- Satterfield, J. H., Satterfield, B. T., & Schell, A. M. (1987). Therapeutic interventions to prevent delinquency in hyperactive boys. *Journal of The Academy of Child and Adolescent Psychiatry, 26*, 56-64.

- Shaywitz, S., & Shaywitz, B. (1991). Introduction to the special series on attention deficit disorder. *Journal of Learning Disabilities, 24*, 68-71.
- Shroyer, C., & Zentall, S. S. (1986). Effects of rate, nonrelevant information, and repetition on the listening, comprehension of hyperactive children. *Journal of Special Education, 20*, 231-239.
- Silver, L. B. (1990). Attention deficit hyperactivity disorder: Is it a learning disability or a related disorder? *Journal of Learning Disabilities, 23*, 394-397.
- Singh, N. N., Epstein, M. H., and Luebke, J. (1990). Psychopharmacological intervention. 1: teacher perceptions of psychotropic medication for students with serious emotional disturbance. *Journal of Special Education, 24*, 283-295.
- Slinimer, L. W., & Brown, R. T. (1985). Parents' decision-making process in medication administration for control of hyperactivity. *Journal of School Health, 55*, 221-225.
- Stevens, J. (1992). *Applied Multivariate Statistics for the Social Sciences*, (2<sup>nd</sup> ed.). New Jersey: Lawrence Erlbaum.
- Stanford, L. D., & Hynde, G. W. (1994). Congruence of behavioural symptomatology in children with ADD/H, ADD/WO and learning disabilities. *The Journal of Learning Disabilities, 27* (4), 243-253.
- Stine, J. J. (1994). Psychosocial and psychodynamic issues affecting noncompliance with psychostimulant treatment. *Journal of Child and Adolescent Psychopharmacology, 4* (2), 75-86.
- Summers, J. A. & Kaplan, P. J. (1987). Laypeople's attitudes toward drug treatment for behavioral control depend on which disorder and which drug. *Clinical Pediatrics, 26*, 258-263.

- Swanson, J. M. (1991). Effects of stimulant medication on learning in children with ADHD. *The Journal of Learning Disabilities, 4*, 219-230.
- Swanson, J. M., Cantwell, D., Lerner, M., McBurnett, K., Pfiffer, L., & Kotkin, R. (1992). Treatment of ADHD: Beyond medication. *Beyond Behaviour, 4*, 113-122.
- Swanson, J. M. (1993). Effect of stimulant medication on children with attention deficit disorder. *Exceptional Children, 6* (2), 154-162.
- Tesser, A. (1993). The importance of heritability in psychological research: the case of attitudes. *Psychological Review, 18*, 591-602.
- Welner, Z., Welner, A., Stewart, M., Palkes, H., & Wish, E. (1977). A controlled study of siblings of hyperactive children. *Journal of Nervous and Mental Disease, 165*, 110-117.
- Whalen, C. K., & Henker, B. (1991). Social impact of stimulant treatment for hyperactive children. *The Journal of Learning Disabilities, 24* (4), 231-241.
- Zentall, S. S. (1993). Research on the educational implications of attention deficit hyperactivity disorder. *Exceptional Children, 60* (2), 143-153.
- Zubrick, S., Silburn, S., & Fullerton, P. (1994). Attention deficit disorder in children: Responding to the children's academic and social-behavioural problems. *Education Department of Western Australia*, Unpublished paper.

## **APPENDIX A.**

### **The Questionnaire**



### Questionnaire

There are many children with major attention problems in schools. These children are often described as having a disorder which is called Attention Deficit Disorder or (ADD). Some children may have ADD as well as hyperactivity this is called Attention Deficit Hyperactive Disorder or (ADHD). Ritalin and Dexamphetamine are stimulant drugs which are often prescribed for children with medically diagnosed major attention problems (ADHA or ADD). It has been stated by some authorities that stimulant drugs may help the child to focus on the important things in learning. Please select the answer which best reflects your attitude with regard to each question. Thank you.

Please Tick the appropriate box.

- (1) Children with an attention deficit disorder and behaviour problems should be given a stimulant drug to help them adjust to school.

Strongly agree

agree

neutral

disagree

strongly disagree






- (2) Children with an attention deficit disorder and difficulties in learning maths should be given a stimulant drug to help them adjust to school.

Strongly agree

agree

neutral

disagree

strongly disagree






- (3) Children with an attention deficit disorder and with problems in getting on with other children should be given a stimulant drug to help them adjust to school.

Strongly agree

agree

neutral

disagree

strongly disagree

- (4) Children with an attention deficit disorder and with problems coping with the routine of classroom work should be given a stimulant drug to help them adjust to school

Strongly agree      agree      neutral      disagree      strongly disagree

- (5) Children with an attention deficit disorder and with difficulties in handwriting should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

- (6) Children with an attention deficit disorder and with a low self esteem should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

- (7) Children with an attention deficit disorder and difficulty with thinking should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

- (8) Children with an attention deficit disorder who often have mood swings should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(9) Children with an attention deficit disorder and difficulties with reading should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(10) Children with an attention deficit disorder and with problems following and obeying rules should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(11) Children with an attention deficit disorder who are impulsive should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(12) Children with an attention deficit disorder who often react with verbal outbursts and frequently use swear words should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(13) Children with an attention deficit disorder who are very dreamy in their reactions should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(14) Children with an attention deficit disorder who have difficulty participating in group activities should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(15) Children with an attention deficit disorder who have difficulty ignoring noise and movement in the classroom should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(16) Children with an attention deficit disorder who have difficulty completing assigned tasks should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(17) Children with an attention deficit disorder who destroy books and property should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(18) Children with an attention deficit disorder and with difficulties in learning spelling should be given a stimulant drug to help them adjust to school.

Strongly agree      agree      neutral      disagree      strongly disagree

(19) Children with an attention deficit disorder who constantly demand a teacher's attention should be given a stimulant drug to help them adjust to school.

Strongly agree

agree

neutral

disagree

strongly disagree

(20) Children with an attention deficit disorder who often react with aggression or physical violence towards others should be given a stimulant drug to help them adjust to school.

Strongly agree

agree

neutral

disagree

strongly disagree

**Thank you for your time!**

## **APPENDIX B.**

### **Letter to Participants**

Dear Participant,

I am currently undertaking research as part of my Bachelor of Education honours degree. The research involves the perceptions of parents and teachers regarding the effects of medication on children. Research of this nature may illuminate reasons for action and provide in-depth information regarding teacher and parent interpretations of the effects of stimulant medication on children.

I appreciate your time and effort as a participant in this research and I would like to reassure you that all data collected during this research project will be completely anonymous with all participants being classified according to group rather than as an individual identity. All data will be destroyed by fire after the completion of the research project, and no details of individual participant responses will be given to any person other than the researchers.

The questionnaire will require approximately 10-15 minutes of your time to complete. If you have any questions concerning the study, please complete the form on the following page and I will be happy to answer these for you. If you are willing to be a participant in this research please complete the agreement form on the same page.

Thank you for your willingness to support this research with your valued contribution.

Kerry Angel  
Dip. Teach. E.C.E.  
Honours student.  
Phone: [REDACTED]

## **APPENDIX C.**

### **Participant Consent Form**



**Participant Consent Form**

**Any questions concerning the research entitled**

*Parent and Teacher attitudes to the pharmacological management of medically diagnosed attention deficit primary school children*

**Can be directed to:**

**Mrs Kerry Angel (Principal Investigator)**

[Redacted contact information]

Questions: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Agreement to take part in the above research**

I (the participant) have read the information above (or have been informed about all aspects of the above research project). Any questions I have asked, have been answered to my satisfaction. I agree to participate in this study, realising I may withdraw at any time.

I agree that the research data gathered for this study may be published, provided I am not identifiable.

\_\_\_\_\_  
Participant Date

\_\_\_\_\_  
Investigator Date